

Investigating Opportunities for Service Design in Education for Sustainable Development

by

Ksenija Kuzmina

*A Doctoral Thesis submitted in partial fulfilment of the requirements for the
award of Doctor of Philosophy of Loughborough University*

March 2014

© Ksenija Kuzmina, 2014

Abstract

This research investigates opportunities for Service Design in Education. The focus is on a particular type of change happening within education that of Education for Sustainable Development (ESD) where Service Design has little presence and limited knowledge. This research has been carried out through grounded theory and contextualised in English institutions of primary education. As a result it identified Service Design as an approach to enable transformational change within educational institutions that seek to move towards ESD. To establish the basis for the research, a literature review has been carried out on Service Design, the vision of ESD and its application in the context of English schools. As a result, Service Design capability to re-design services at organisational level was linked to the gap in normative re-educative change processes towards ESD in English schools. The rest of the research sought to build on these findings. In-depth case studies with five primary schools and a cross-case analysis have been carried out to establish an understanding of ESD change at organisational level. It focused on elements relevant to normative re-educative change processes, which included social and personal norms and values residing within organisational systems. From the case studies, principles, concepts and processes were identified that enabled schools to engage with ESD at the deepest level. The knowledge derived from the case studies was further developed in order to relate the ESD phenomenon to Service Design. Service thinking and organisational change theory were applied to develop a Sustainable Education as a Service Model (SES MODEL) to understand ESD as a phenomenon in a service system. A SES Model was presented back to Service Design community. The sense-making of ESD was undertaken with seven service design practitioners by conducting semi-structured interviews during which they explored the SES Model. The outcome of the interviews showed the model to build service designer's capacity to engage with ESD, while the use of the model showed that designers could envision using it at a normative re-educative change level. The research shows that ESD is a new concept, which is relevant to Service Design. It therefore offers opportunities for further service design research and practical applications.

Acknowledgements

There are so many people who have made this process possible for me.

Tracy Bhamra, my supervisor, whose positive outlook, ongoing support and ability to clarify any complex situation, has guided me from start to finish of this project.

Rhodes, who became not only a supervisor but also a friend, open to chat about any issue at any time, in the office or at home.

I would like to express my biggest gratitude to my Mom and Dad, whose entrepreneurial spirit, love and care have been a continuous source of stability and inspiration to me! Glebchik, my little brother with whom I can share my experiences and once in a while get exposed to a more 'scientific way of thinking'. My Grandmothers whose presence in my life goes beyond the scope of this acknowledgment! Lesley, Mike and Kate who became my second family, and gave me a second home here in the UK.

Everyone who I met at Loughborough became part of my life and my support network during this time. My lovely flatmates at Casa Holt, Rose, Richard, Alena, Noor and Maria! Caro, Mariale, Ricardo, Norman, Garrath, Abby, Pauline, thank you for your insightful conversations, tips and help. Guys at LAGS, Martha, Sam, Mika, Rahul, Pawas and Ale, thank you for growing, harvesting, eating, dancing and celebrating! All the organisers of Lufbra Service Design Jam, it has been wonderful to Jam with you! Ale, Lina, Andre, Naomi, Ian and Bonnie, Marcus and Maryann, Alison, Andrea, Georgina and Chris for helping me to have fun and stay sane!

My lovely girls: Christina, Angie, Julia, Tran, Cindy, Paula, Masha and Aurika, whose friendships become stronger through time and across the continents.

Thank you to Nazareen Heazle, my proof reader, who has been extremely efficient and worked with me at such a short notice to submit my thesis on time!

To my dear Nick, thank you for your unconditional love, for taking such a great care of me, for driving for hours to sit next to me and just work, for making me laugh no matter what state I am in, for believing in my research and taking part in it and for becoming my husband. I love you and this thesis would not be possible without you. Lastly thank you to all of the participants in this research for their time, enthusiasm and contributions!

Table of contents

Abstract.....	i
Acknowledgements	ii
Table of contents	iii
Publications.....	xiv
List of Figures	xv
List of Tables	xvii
This page has been left blank on purpose	xviii
1 Introduction.....	1
1.1 Background to the research.....	1
1.2 The specific context for the study.....	2
1.3 ESD change processes	3
1.4 Education as a service	4
1.5 Research problem, aims, objectives	4
1.5.1 Research problem	4
1.6 Aim	5
1.7 Objectives.....	5
1.7.1 Research questions	5
1.8 Personal motivation	6
1.9 Thesis structural overview	7
2 Literature Review	9
2.1 ESD as new vision	9
2.1.1 ESD as change in curriculum.....	9
2.1.2 ESD as paradigmatic change	10

2.1.3	ESD as expansion of pedagogy	11
2.1.4	ESD as behavioural and learning changes	13
2.1.5	Conclusion.....	15
2.2	ESD in the context of England	15
2.2.1	From theory to practice	16
2.2.1.1	Whole school approach.....	16
2.2.1.2	Findings from ‘best practice’ of ESD in England	17
2.2.1.3	Common characteristics of ESD.....	17
2.2.2	ESD change process in England	18
2.2.3	Change strategies.....	19
2.2.3.1	ESD change through government.....	20
2.2.3.2	Change through NGOs.....	22
2.2.4	Normative re-educative strategy and tools.....	24
2.2.4.1	Pathways.....	24
2.2.4.1.1	Pathways tools analysis.....	25
2.2.4.2	Sustainable school self-evaluation (s3)	26
2.2.4.2.1	S3 tool analysis	26
2.2.4.3	Leading for the future (LfF)	27
2.2.4.3.1	LfF tool analysis	28
2.2.4.4	Normative re-educative strategies conclusion	28
2.2.5	Conclusion.....	29
2.3	Service Design as a normative re-educative change process	31
2.3.1	Introduction	31
2.3.2	Service Design approach.....	32
2.3.2.1	Service design and depth of change.....	32
2.3.3	Service design as normative re-educative change	35
2.3.3.1	Service design as normative re-educative change in NHS	36
2.3.4	Conclusion.....	36
2.4	Chapter conclusion.....	37

3	Methodology	39
3.1	Introduction	39
3.2	Goals and research purpose	39
3.3	Research questions	41
3.4	Research strategy	42
3.5	Research data collection	44
3.5.1	Stage 1 – Literature review	44
3.5.2	Stage 2 – Case studies.....	45
3.5.2.1	Unit of analysis	45
3.5.2.2	Multiple case studies	46
3.5.2.3	Sampling strategy for case studies	46
3.5.2.4	Case studies: Data collection	47
3.5.2.5	In-depth interviews	48
3.5.2.6	Questionnaires	50
3.5.2.6.1	Questionnaire design	51
3.5.2.6.2	Questionnaire distribution	51
3.5.2.7	Follow-up interviews	52
3.5.2.8	Collection of unobtrusive measures.....	53
3.5.3	Stage 4a – Pilot study with service designers.....	54
3.5.4	Stage 4b – In-depth interviews with service designers	55
3.5.4.1	Stage 4b Sampling	56
3.6	Research data analysis	57
3.6.1	Stage 2 –Case studies analysis.....	58
3.6.1.1	Interviews with head teachers	59
3.6.1.2	Questionnaires	61
3.6.1.3	Follow up interviews and unobtrusive measures	62
3.6.1.4	Within-case analysis	63
3.6.1.5	Cross-case analysis	66
3.6.2	Stage 3 – Model development.....	69

3.6.3	Stage 4a – Pilot analysis.....	70
3.6.4	Stage 4b – Analysis of the Interviews with service designers	70
3.7	Establishing trustworthiness.....	71
3.7.1	Validity.....	71
3.7.2	Reliability.....	72
3.7.2.1	Ethical considerations.....	73
3.7.3	Generalisability	73
4	Introduction to Cases	75
4.1	Introduction	75
4.2	School profiles.....	75
4.2.1	Case 1.....	76
4.2.2	Case 2.....	77
4.2.3	Case 3.....	79
4.2.4	Case 4.....	80
4.2.5	Case 5.....	81
4.3	Conclusion.....	83
5	Developing themes.....	84
5.1	Defining Sustainable Development.....	84
5.2	Defining Education for Sustainable Development.....	85
5.3	Defining Sustainable Development and ESD Conclusion.....	86
5.4	Approaches to ESD	87
5.4.1	Defining strategies	87
5.4.1.1	Defining strategies conclusion.....	90
5.4.2	Issues associated with ESD and their sources	91
5.4.3	Healthy Living and Value of Care (self, others, environment).....	91
5.4.4	Conclusion.....	95

5.5	Other issues.....	96
5.5.1	Concepts	97
5.5.1.1	Practicality and small scale.....	97
5.5.1.2	No waste and closed loop	98
5.5.1.3	Networks	99
5.5.1.4	Conclusion	100
5.5.2	Approaches to the issues.....	102
5.5.2.1	Approaches: Conclusion	108
5.5.3	Consolidating approach strategies	109
5.6	Involvement of students	110
5.6.1	Involvement of pupils, purpose, means of activation and impact	113
5.6.1.1	Awareness of the issues	113
5.6.1.2	Complex issues	114
5.6.1.3	Behaviours, values, practices and skills.....	116
5.6.2	Encouraging Student voice	119
5.6.3	Interest in Learning.....	120
5.6.4	Conclusion.....	121
5.7	Scope of student’s involvement.....	122
5.7.1	Conclusion.....	128
5.8	Embedding ESD into the curriculum	130
5.8.1	Consistency of ESD in the curriculum	130
5.8.2	Embedding ESD into the curriculum strategies	132
5.8.3	Conclusion.....	134
5.9	Projects.....	135
5.9.1	Acquisition of the resources	136
5.9.2	Projects to support larger resources	140
5.9.3	Investigative Projects.....	141

5.9.4	Behaviour Enabling /Awareness projects	142
5.9.5	Educative Community Projects	143
5.9.6	Prototype projects	144
5.9.7	Projects: Conclusion.....	144
5.10	Projects and their role in moving towards ESD	145
5.10.1	Projects as entry point into ESD	145
5.10.2	Projects and their on-going activity.....	147
5.10.3	Projects as a learning process.....	149
5.10.4	Conclusion.....	150
5.11	Partnerships	151
5.11.1	Building relationships through partnerships	152
5.11.2	Partners and ESD values	153
5.11.3	Partnerships: conclusion.....	154
5.12	Involvement and activation of staff.....	155
5.12.1	Conclusion.....	157
5.13	Operations.....	158
5.13.1	Operations: Conclusion.....	159
5.14	Barriers	160
5.14.1	Public service context barriers.....	160
5.14.1.1	UK Governmental Assessment of Education.....	160
5.14.1.2	Changing UK governmental agenda	160
5.14.1.3	Changing UK governmental agenda: Decrease in resources	161
5.14.1.4	Changing UK governmental agenda: Lack of priority.....	161
5.14.1.5	Conclusion	161
5.14.2	General skills and knowledge barriers.....	162
5.14.2.1	Defining Education for Sustainable Development	162
5.14.2.2	Inability to transfer knowledge to students.....	162

5.14.2.3	Constructing curriculum	163
5.14.3	Organisational barriers	163
5.14.3.1	Change in Leadership	163
5.14.3.2	Lack of resources	164
5.14.3.3	Deprived context	164
5.14.3.4	Staff participation	164
5.14.3.5	Lack of monitoring, assessing, planning.....	164
5.14.3.6	Lack of school support.....	165
5.14.4	Organisational/individual barriers.....	165
5.14.4.1	Clash of values/priorities.....	165
5.14.5	Individual barriers.....	166
5.14.5.1	Staff knowledge	166
5.14.5.2	Particular interest.....	166
5.14.5.3	Barriers conclusion	166
5.15	School Motivation	167
5.15.1	Personal motivation.....	167
5.15.2	Combined Motivations	168
5.15.2.1	Positive work environment	169
5.15.3	Organisational Motivations	171
5.15.3.1	Positive impact on children	171
5.15.3.2	Developing an organisational ethos.....	171
5.15.3.3	General engagement with ESD.....	172
5.15.3.4	Sustainable development as cost/benefit.....	172
5.15.3.5	Innovation.....	173
5.15.3.6	Leadership	173
5.15.3.7	Distributed leadership	174
5.15.3.7.1	Leadership and distributed leadership	174
5.15.3.8	Self-assessment	174
5.15.3.9	Awards/Recognition	175
5.15.3.10	Stakeholders	175

5.15.3.11	Conclusions	175
5.16	Chapter conclusion.....	179
6	Development of the conceptual Sustainable Education Service Model (SES Model).....	186
6.1	Introduction	186
6.2	Purpose of SES Model	188
6.3	Developing a SES Model.....	190
6.3.1	SES Model and service phenomena.....	190
6.3.1.1	Assumption.....	195
6.3.2	SES Model overview.....	196
6.4	SES Model individual elements.....	199
6.4.1	External Environment	199
6.4.2	Service vision	201
6.4.2.1	Contributing to an overall sustainable development movement (external)	202
6.4.2.2	Holistic user experience (internal)	202
6.4.3	Organisational strategy.....	203
6.4.3.1	Defining sustainable development issues, concepts, values	204
6.4.3.2	Defining ‘whole service’	204
6.4.4	Organisational Culture	205
6.4.4.1	Curriculum formal/informal	206
6.4.5	Projects	207
6.4.6	Operations development.....	209
6.4.7	Awards	210
6.4.8	Organisational leadership.....	211
6.4.8.1	Distributed Leadership to Service Staff.....	211
6.4.8.2	Distributed Leadership to Users.....	212
6.4.8.3	Distributed Leadership to Stakeholders.....	212

6.4.9	Organisational Structure.....	214
6.4.10	Value Co-created for Service Users/Service Provider	215
6.5	Sense-making of ESD with Service Designer	216
6.5.1	Understanding the holistic model	218
6.5.1.1	Holistic model and its subject.....	218
6.5.1.2	Contextualising the Model	219
6.5.1.3	Clarifying ESD in the model	220
6.5.1.4	Model and its language	220
6.5.1.5	Visual communication of the model	220
6.5.2	Understanding of the individual elements	221
6.5.2.1	‘Things to consider’	221
6.5.2.2	Terminology in individual elements	222
6.5.2.3	Partnership element.....	222
6.5.2.4	Value co-creating element	223
6.5.2.5	Misinterpretation of the elements and parts of the elements..	223
6.5.3	Model and intended users.....	224
6.5.4	Model and its application	225
6.5.5	Understanding the model conclusion.....	225
6.5.6	Evaluation of the model.....	226
6.5.6.1	Scenario 1. Using the Model to pitch the projects.....	226
6.5.6.2	Scenario 2. Using the Model to discover, evaluate, analyse.....	228
6.5.6.3	Scenario 3. Using the Model as a Brainstorming tool to develop projects	229
6.5.6.4	Strengths and improvements for the development of the model... ..	230
6.6	Conclusion	231
7	Discussion	233
7.1	Introduction	233
7.2	A process to understand organisational change at transformational level for service design	234

7.3	User-centeredness, what does this mean for Service Design in ESD?.....	236
7.4	Service designers and the sustainability agenda	237
7.5	Service designers and change in education – a practical outlook.....	238
7.6	Visual communication an important aspect of Service Design knowledge acquisition	241
7.7	Service designers are action oriented.....	242
7.8	Value of content based models in the service design process	242
7.9	SES MODEL an expansion of WHOLE SCHOOL APPROACH MODEL.....	244
8	Conclusion Chapter	246
8.1	Meeting the aim and objectives of the research	246
8.2	Overall conclusions	248
8.3	Contribution to knowledge	251
8.4	Limitations of the study	252
8.5	Future work.....	253
8.6	Final Reflections	254
8.6.1	Alternative audiences for the SES Model	254
8.6.2	Joined up thinking: practice vs policy	255
8.6.3	ESD and Social Innovation	256
8.6.4	Service Design, ESD and Transformational change	256
8.7	SES MODEL an expansion of WHOLE SCHOOL APPROACH MODEL.....	257
	References	259
	Appendix A.....	273
	Appendix B.....	277
	Appendix C.....	278
	Appendix D.....	279
	Appendix E	285

Appendix F	292
Appendix G.....	300
Appendix H.....	306
Appendix I	311
Appendix J.....	316
Appendix K.....	317
Appendix L	319
Appendix M.....	323
Appendix N.....	324

Publications

Kuzmina K, Bhamra, T.A. (2014) Positioning Service Design as Transformational Approach in Education for Sustainable Development (ESD) In *ServDes2014 Conference*. Lancaster: Lancaster University [Online] Available from <http://www.servdes.org/wp/wp-content/uploads/2014/06/Kuzmina-K-Bhamra-T.pdf>

Kuzmina K, Bhamra, T.A, Trimmingham, R. (2012) Service design and its role in changing education. In *Service Design with Theory: Discussion on Change, Value and Methods*. (Eds) Miettinen S, Valtonen V. pp. 27-36. Lapland University Press.

Kuzmina, K. Trimmingham R., Bhamra, T. (2011) *Education and Sustainable Development: A New Context For Design In: Design Activism and Social Change Conference, Barcelona, September 2011*. [Online] Available from:<http://www.historiadeldisseny.org/congres/pdf/25%20Kuzmina,%20ksenija%20EDUCATION%20AND%20SUSTAINABLE%20DEVELOPMENT%20A%20NEW%20CONTEXT%20FOR%20DESIGN.pdf>

Kuzmina, K (2011) '*Design Process as an Approach to ESD in the UK Primary Schools*' Research Poster In: Imagination Lancaster Design PhD Conference. Lancaster, UK, June 30th – July 1st, 2011

Kuzmina, K (2011) '*Design Process as an Approach to ESD in the UK Primary Schools*' Research Poster In: Sustainable School Design and Operation: A Whole School Approach De Montfort University, Leicester June 14th, 2011

Kuzmina, K. (2011) Snapshot: Design as an approach to education for sustainable development. Touchpoint Vol 2 No. 3, January 2011

List of Figures

Figure 1-1: Thesis Structure Tree	7
Figure 2-1: The Five Strands Of The Whole School Approach	16
Figure 2-2 Pathways Tool	25
Figure 2-3: Extract From Sustainable School Self-Evaluation Tool	26
Figure 2-4: Matrix Used In The LfF Program To Guide Process Of Change	27
Figure 2-5: Orienting Framework	33
Figure 3-1: Components of Data Analysis: Interactive Model	57
Figure 3-2: Transcribed Interviews in NVivo	59
Figure 3-3: Collection of Axial/Open Codes With Description	60
Figure 3-4: Code Manager Displaying Query Run For One Interviewer Per One Code	61
Figure 3-5: Further Developing Categories Through Questionnaire Analysis	61
Figure 3-6: Memos	62
Figure 3-7: Example of a Network for Cross-Case Comparison, Showing ESD Information	69
Sources	
Figure 3-8: Coding of Interviews With Service Designers	70
Figure 4-1: Case 1 Profile On A National Level	76
Figure 4-2: An Eco Build of Case 1	77
Figure 4-3: Case 2 Profile On A National Level	78
Figure 4-4: Case 2 Willow Classroom	78
Figure 4-5: Case 3 Student Gardens	79
Figure 4-6: Case 3 Profile On A National Level	80
Figure 4-7: Case 4 Library Space	81
Figure 4-8: Case 5 Outside Area	81
Figure 4-9: Case 5 Profile On A National Level	82
Figure 5-1: ESD is Defined By Schools Integrating Definition of Sustainable Development and Education	86
Figure 5-2: Relationship Between School, ESD, Children and Community	88
Figure 5-3: Case 3 School Farm	93
Figure 5-4: Case 1 Waste Management During Construction Project	98
Figure 5-5: Case 1 Waste Recycled (blue) and Waste to the Landfill (orange) After Eco Build Project	99
Figure 5-6: Sources For Influence On Topics/Values/Concepts	101
Figure 5-7: Measures its Energy Use	102
Figure 5-8: Approaches To The Topics/Issues/Concepts	104

Figure 5-9: Case 3 School Resource – A Farm	105
Figure 5-10: Case 2 Eco Codes - Defining the Primary Issues of the School	106
Figure 5-11: Case 4 Two Buildings Joined Together to Create an Additional Classroom	108
Figure 5-12: Consolidating Strategies	109
Figure 5-13: Case 3 Children Taking Care of Two Pigs That Will Go To Slaughter	115
Figure 5-14: Case 5 Recycling Bins in the Classroom	116
Figure 5-15: Case 1 Caring For Chickens	116
Figure 5-16: EcoSchools Energy Use Form	118
Figure 5-17: Scope Of Students' Involvement With ESD	124
Figure 5-18: Case 2 Musical Instruments Designed And Used By Children	125
Figure 5-19: Case 1 Students Designing Eco Build	125
Figure 5-20: Case 3 Woodlands	136
Figure 5-21: Life of a Typical Project	137
Figure 5-22: Case 5: Sensor Toilets	138
Figure 5-23: Case 3 School's Beehives That Have Been Around Since the 1970s	139
Figure 5-24: Case 3 Poly Tunnel	140
Figure 5-25: Projects' timelines	148
Figure 5-26: Partnerships' Congruent Values And Sustainability Outcomes	152
Figure 5-27: Partnerships Value Differences/Overcoming Strategy	154
Figure 5-28: Schools' Sources of Motivation for ESD (General Motivations for Case 4)	170
Figure 5-29: Motivation For Staff	178
Figure 6-1: Overview of Two Types of Relationships Between Schools and Students	192
Figure 6-2: Configuration of the School Relationships in Schools Moving Towards ESD	193
Figure 6-3: SES Model	198
Figure 6-4: SES Model, External Environment Section	199
Figure 6-5: SES Model, Service Vision Section (Expanded)	201
Figure 6-6: SES Model, Organisational Strategy Section (Expanded)	203
Figure 6-7: SES Model, Organisational Culture (Overview)	205
Figure 6-8: SES Model, Organisational Culture Projects Section (Expanded)	207
Figure 6-9: SES Model, Operations Development Section (Expanded)	209
Figure 6-10: SES Model, Organisational Leadership Section (Expanded)	211
Figure 6-11: SES Model, Organisational Structure	214
Figure 6-12: SES Model, Organisational Structure Value Co-creation Section (Expanded)	215

List of Tables

Table 2-1: ESD And Issues Related To Three SD Dimensions	10
Table 2-2: Participatory Pedagogies	13
Table 2-3: ESD 1 and ESD 2	14
Table 2-4: Common Characteristics Of ESD In English Schools	18
Table 2-5: Change Strategies	19
Table 2-6: ESD Change Processes Found in England	23
Table 2-7: Tools That Support Normative Re-educative Change Process in English Schools	29
Table 2-8: Service Design Principles, Tools And Methods Used At Organisational Transformational Level	34
Table 2-9: Principles of Service Design That Support Normative Re-educative Change	35
Table 3-1: Classification Of The Purposes Of Enquiry	41
Table 3-2: Research Questions And Questions	42
Table 3-3: Research Questions and Data Collection Methods	43
Table 3-4: Data Collection Methods in Case Studies	48
Table 3-5: Types of Interviews	49
Table 3-6: Advantages and Disadvantages of Self-Administered Questionnaires	50
Table 3-7: Data Analysis Components Definitions, Based on Miles and Huberman, 1994	58
Table 3-8: Purposes for Inductive Analysis	58
Table 3-9: Conceptually Clustered Matrix SD/ESD Definition Case 4	63
Table 3-10: Conceptually Clustered Matrix by Projects	64
Table 3-11: Analysis of SD Definition Across All Cases	67
Table 3-12: Activity, Student Activation and Impact Matrix	68
Table 3-13: Defining Validity, Reliability and Generalizability	71
Table 6-1: Profiles of Service Designers	217
Table 8-1 : Attainment of Aim and Objectives For This Research	247

This page has been left blank on purpose

1 Introduction

This chapter sets out the context for this research and the overview of the thesis structure. The research aims to investigate opportunities for Service Design to enable Education for Sustainable Development (ESD) within educational institutions with the focus on institutions of primary education, drawing on theories of organisational change and service thinking.

1.1 Background to the research

Service Design is an emerging area of design that seeks to apply design methods and principles to the design of services, supporting service development (Holmlid, 2007 and Mager, 2004). While it is a broad discipline, some of its processes, tools and methods are driven by human-centred and participatory theories of change that focus on the capacity building of people within service organisation (Szebeko, 2012 and Pacenti, 2012) to discover, develop and embed change in order to improve services. The scope of change that relates to Service Design varies from being on the periphery of an organisation, to being deep seated, where alternative service concepts and models are developed within and outside of organisations (Cottam and Leadbeater, 2004, Cipolla and Moura, 2011). Most research on Service Design in public services in the UK has been happening within the domain of healthcare (Freire and Sangiorgi, 2010, Macdonald et. al, 2012). In particular, studies are undertaken to explore Service Design as an approach to change the healthcare system from being 'provider-centred' to being 'patient-centred' (Bate and Robert, 2006).

One of the areas in the public sector that is currently undergoing a shift but has seen minimum engagement from Service Designers is education. In the last decade education has been experiencing change towards sustainable development, as

indicated by UN Decade of Education for Sustainable Development (2005-2014). The vision for change has been set out globally and presupposes a transformational shift in thinking, values, teaching and learning processes. However, change in the system has been very slow and incomplete. Whilst a Service Design approach has potential for education, it is yet unclear how it can be used for the purposes of enabling change towards ESD in the UK.

1.2 The specific context for the study

Educational systems are diverse and are based on the national, political and cultural contexts that provide the conditions (structures, policies, coordination, etc.) for an ESD concept to be developed and implemented (Wals, 2009). Therefore, how a shift towards ESD can happen, needs to be understood within the context of a particular educational system. This research focuses on primary schools in the UK and their approach to ESD. In particular, as education is administered through separate systems for England, Northern Ireland, Scotland and Wales (Blum and Husbands, 2009), the focus of this research is on English education, which is provided by the government as an essential public service to all citizens (Grace, 1994).

ESD in England is viewed primarily as social and behavioural change rather than educational change with the focus on pre-determined outcomes and agreed goals, fitting with environmental goals of the UK government (Bourn 2005). For example, schools have been paying more attention to energy use as they receive support from the government and NGO's to reduce their carbon production as a result of UK Climate Change Act 2008 (UKNC UNESCO 2010). The macro setting of the educational system in England therefore does not support change towards ESD in its holistic meaning. Research shows that while the majority of work towards ESD is within behaviour change and is on the periphery of the school's core activities (Symons, 2008), there are some schools that portray 'best practices', approaching sustainability through their behaviour change and pedagogy. This suggests that change towards ESD is contextual and is impacted by the schools' micro or organisational contexts as well as their macro contexts.

Understanding the **conditions that support or hinder a process of change** towards ESD within different school contexts, could inform the shift in schools towards ESD in its holistic meaning. The importance of micro context within the change process is highlighted in the research by Reed (2009) who explored the impact of two different cultures on the uptake of the Eco-Schools Program, showing the ‘discrepancies’ between the vision for ESD and the ‘realities’ in practice. Research by Wheeler et al. (2011) also recognised a relationship between the context, both physical and social, and the overall experience of sustainable education by the pupils. Other research, mostly done by NGOs focuses on the evidence of ‘best practices’ within the schools, with the focus on specific school processes or elements that contribute to schools’ ESD practices, as well as some general barriers (WWF UK, 2011). The research into the micro context of schools in relation to ESD change process is therefore scarce and it continues to be unclear why some schools move towards ESD holistically while others don’t. In this context more research is needed to build such understanding and to inform the change process towards ESD within schools.

1.3 ESD change processes

As mentioned above, the current effort by the government and NGOs **to support the process of planned change** towards ESD within schools has been limiting. In relation to the ESD concept or what is being changed, the support has been focusing on the change of behaviour. In addition change is happening in a limited number of schools and by selected individuals. With regards to the latter point, theory of change denotes that organisational change efforts usually experience some form of resistance due to ‘resilience’ characteristic of human systems (Kotter and Schlesinger, 1979). Different levels of resistance exerted by the system correlates with the type of strategy it experiences. Change strategies with a clear plan of action and minimum involvement of people in its development will see great resistance. Change strategies that are based on maximising participation and involvement in developing change direction will minimise any resistance to change

and therefore be more successful (ibid.). When considering the type of change strategy that is currently supported by the government and NGOs it may be seen as a top-down process, with a plan of action initiated outside of the school context that necessitates implementation by the school. This indicates a gap in the development of support for participatory change approaches to ESD that this research seeks to contribute to.

1.4 Education as a service

Most literature on change in education and ESD is coming from within the educational sector which frames education as a learning process (Sterling, 2005, Jickling, 2005, Scott and Vare, 2007, Tilbury and Wortman, 2004). However, a frame is a particular point of view (Kolko, 2010), based on a subjective meaning assigned to the concept where some elements are more meaningful than others (Fischer, 2003). This means that, although education is usually framed as a learning process, it does not have to be. For example, education in the UK may also be defined as a *public service*, provided through the schooling system to all the citizens-in-the-making (Grace, 1994). Such reframing, or viewing a concept from a new perspective (Kolko, 2010), provides a new meaning to the identified issue of facilitating change in schools as an issue of *change in services and service organisation*.

1.5 Research problem, aims, objectives

1.5.1 Research problem

Service Design is a design approach that is related to the change and development of services including public services, whilst using participatory, human-centred principles. The relevance of this design approach to supporting change in institutions of primary education in England has been suggested in the introduction of this research, when it is recognised that schools are organisations providing a public service and that there is a need for a participatory change strategy towards ESD. Current understanding of ESD vision in practice at organisational level is scarce,

and further research is required to define it. In addition, there is no up-to-date literature to suggest a relationship between ESD, public services, change theory, and Service Design discipline, nor is there explicit evidence to demonstrate the potential of Service Design to contribute to the change of educational services towards ESD. This research project seeks to address these issues, adding to further knowledge of ESD at an organisational level and developing an opportunity for Service Designers to engage with such knowledge in order to define how Service Design can engage with ESD.

1.6 Aim

The research aims to investigate opportunities for Service Design to enable ESD within educational institutions with the focus on institutions of primary education, drawing on theories of change and Service Design thinking.

1.7 Objectives

1. To critically review literature around the concepts of ESD, the current state of change processes towards ESD in the English primary educational system and their relationship to three planned change strategies of human systems, transformational change and Service Design approach.
2. To develop understanding of the role ESD as a change at an organisational level.
3. To engage service designers with the ESD concept as a service at an organisational level.
4. To define opportunities for Service Design to enable ESD.

1.7.1 Research questions

1. What is the relationship between Service Design and ESD?
2. What does ESD change looks like at an organisational level?
3. How can ESD, at an organisational level, be presented for the purposes of Service Design engagement?
4. How can Service Design be used to enable ESD?

1.8 Personal motivation

The author has a degree in Interdisciplinary Design from the University of Texas in 2006, and graduated from Kingston University with an MA in Design for Development in 2009. The MA course has raised the author's awareness of the broad issues that exist in sustainable development, the need for immediate action towards it, and the potential of design as a tool to resolve it.

During her major project the author focused on UK education and developed an online framework to be used by secondary schools in the Royal Borough of Kingston London to incorporate the Government's National Framework for Sustainable Schools in the areas of community and curriculum. During the research stage of the project, the author carried out several interviews with the schools' headteachers, which highlighted the schools' interest in moving towards education for sustainable development as well as multiple barriers to doing so. A desire to further understand the challenges that face schools in the area of ESD and contribute to the increase of schools that undertake it, led the author to undertake this research project.

1.9 Thesis structural overview

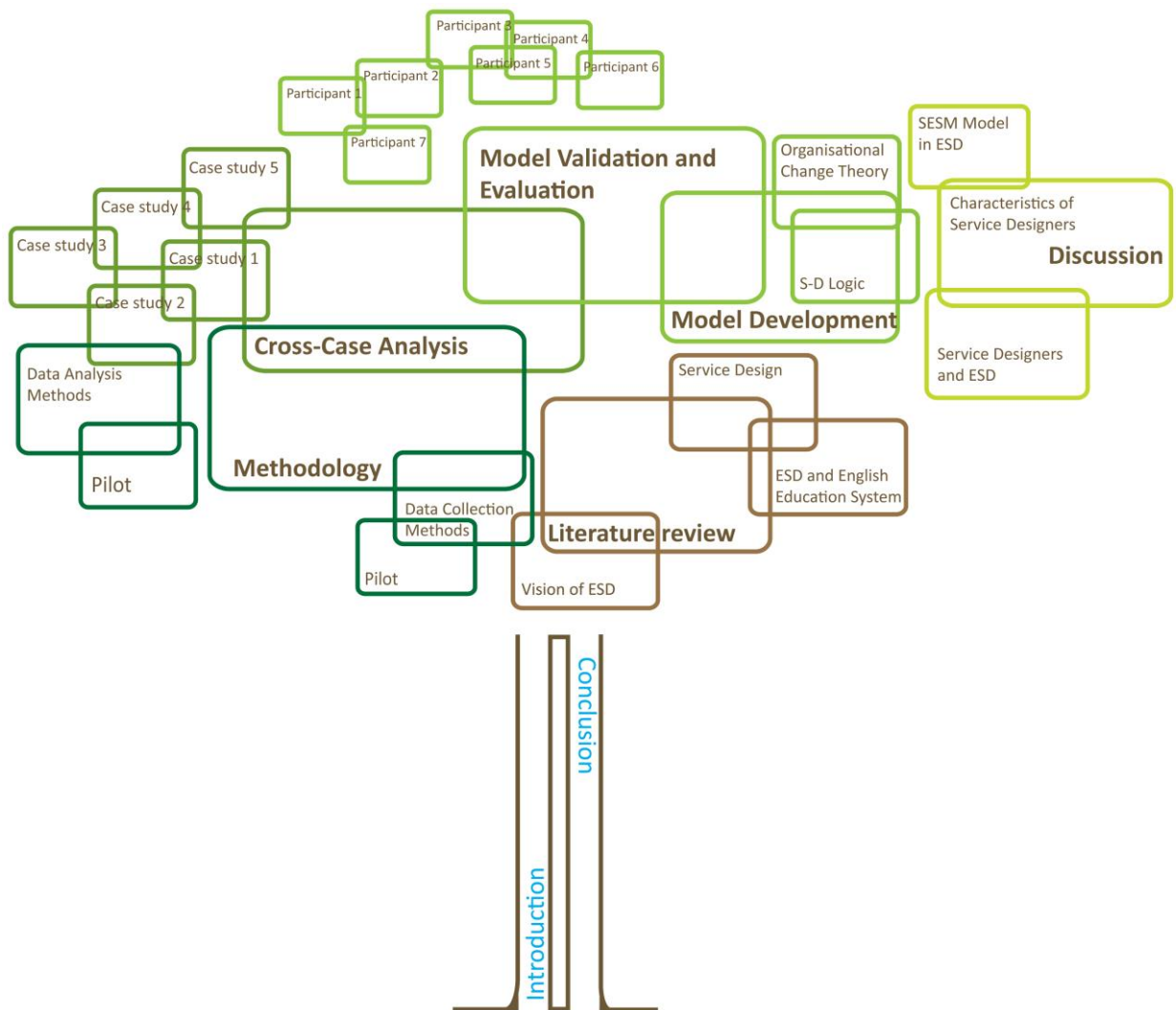


Figure 1-1: Thesis Structure Tree

This thesis is composed of:

Chapter 1 – Introduction

In this chapter, the general context for the research is presented along with the research problem, aim and objectives. It also includes an outline of the structure of the thesis with an overview of the content of each chapter.

Chapter 2 – Literature Review

This chapter explores the literature that is relevant to this research project. The first section reviews literature surrounding the concept of ESD. It then explores ESD in practice within the context of English educational system, relating it to theories of change and establishing the opportunity for a normative re-educative change

strategy. The last section introduces service design and highlights its characteristics as a normative re-educative change strategy.

Chapter 3 – Methodology

This chapter outlines and justifies the research design used in this project. It defines the research strategy and discusses data collection and analysis methods and techniques used in all stages of the research.

Chapter 4 – Introduction to Cases

This chapter introduces five cases used in the study. It provides an introduction to each case and draws initial comparisons between them.

Chapter 5 – Developing Themes

The following section presents cross-case analysis of the five Cases. It does so through themes that have been identified and developed as a result of within-case analysis conducted for each case (see APPENDIX I). The cross-case analysis uses various types of matrices as discussed in Chapter 3 to support the development and discussion of each theme.

Chapter 6 – Development of the conceptual Sustainable Education Service Model (SES Model)

This chapter describes the development of SES Model. It then illustrates the model and discusses individual elements in detail. The sense making of ESD through the model with Service Designers is also presented, and future improvements to the model described.

Chapter 7 – Discussion

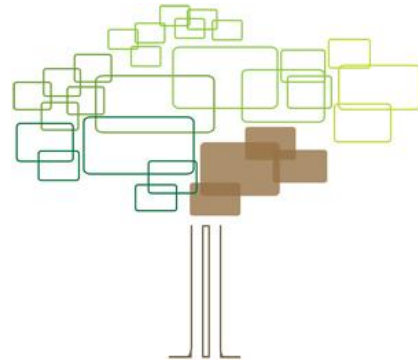
This chapter integrates and discusses findings from the research in light of previous research and literature.

Chapter 8 – Conclusion

This chapter brings together all areas of research into a general conclusion, showing how the aim and objectives of this research were met. It suggests a contribution to knowledge, experienced limitations of the study and suggests opportunities for future work.

2 Literature Review

This chapter explores literature relevant for this research project. The first section reviews literature surrounding the concept of ESD. It will then explore ESD in practice within the context of the English educational system, relating it to theories of change and establishing the opportunity for a normative re-educative change strategy. The last section introduces Service Design and highlights its characteristics as a normative re-educative change strategy.



2.1 ESD as new vision

In the context of unsustainable development the need to reorient formal education towards sustainable development prevails on the international level (Mulà and Tilbury, 2011) with the agreement that this will require a shift in thinking, learning and teaching (Sterling, 2005, UNESCO 2009). However, what such shift presupposes continues to be debatable (Reed, 2009). In the next sections, different perspectives and meanings of ESD are presented, and a conclusion is drawn on what the change towards ESD might mean.

2.1.1 ESD as change in curriculum

The initial understanding of change towards ESD was based on how change in environmental education (EE), which has been around since 1970s, as well as other more recent 'adjectival' educations (peace education, global education, etc.) (Wals, 2009) has taken place. These educations presupposed change predominantly on the disciplinary level, or changes within the content of the curriculum (McKeown and Hopkin, 2007). This shaped first modifications of education towards ESD. The

content was to be expanded to include three dimensions of ‘Sustainable Development’ (Brundtland Report, 1987). It sought to integrate issues from the socio-cultural dimension, environmental dimension, and economic dimension (Wals, 2009). Issues related to these dimensions and education, are described in Table 2-1.

Table 2-1: ESD And Issues Related To Three Sustainable Development Dimensions (Wals,2009: 28)

Socio-cultural dimension	Refers to issues related to social cohesion, equity and justice, human rights, peace and human security, gender equality, cultural diversity and intercultural understanding, health, HIV and AIDS and new forms of governance.
Environmental dimension	Refers to issues related to natural resources (water, energy, agriculture, biodiversity), climate change, rural development, sustainable urbanization, disaster prevention and mitigation.
Economic dimension	Refers to issues related to poverty reduction, corporate responsibility and accountability and re-orienting the market economy.

2.1.2 ESD as paradigmatic change

In addition to the expansion of the curriculum content, more current discourse in ESD is being influenced by ecological and systems thinking and the need for education to create change for long-term sustainability, meaning changes within mindsets, values and lifestyles of individuals and society (Tilbury and Wortman, 2004; Tilbury, 2010, UNESCO, 2011). This change requires a shift in a whole educational paradigm. Paradigm is defined as *“a constellation of concepts, values, perceptions and practices shared by [any] community, which forms a particular vision of reality that is the basis of the way the community organises itself”* (Capra 1986:11 in Sterling, 2003:120).

Ecological and systems thinking presumes a new educational paradigm that is seen as an alternative to the current dominant ‘mechanistic’ educational paradigm (Sterling, 2003). The mechanistic view is based on the discoveries and the observations of the natural world in the 18th century which led to the dualistic worldview, separating the mind and the body, spirituality and materialism, the self

and the other, the man and the nature (Skyttner, 2005). This dualistic view led to the metaphor of the world as a machine, that is rational and deterministic, a machine that is a collection of its predetermined parts, where everything has a linear cause and effect.

The ecological view that emerged in science is based on the metaphor that describes the world as a living organism or a network of interdependent and unified living systems (Capra, 2007). Based on this worldview, the human system is also a part of the world's ecosystem as a whole. This means that the human system is an active participant and contributor to the network of the relationships with other systems and organisms in nature, continuously participating in the process of co-creating the whole. This infers that man and the world have an inherent relationship of co-existence (Cobb, 1995).

Ecological systemic thinking therefore presupposes change in the educational paradigm that will include a new thinking that is relational, integrated, and joined-up (Tilbury and Wortman, 2004: 79). It also includes a set of alternative values such as **social/ecological responsibility, cooperation, and interconnectedness** (Sterling, 2003 and Capra, 1994). Finally it presupposes new educational practices that are inclusive and integrative, participatory and cooperative (ibid.).

2.1.3 ESD as expansion of pedagogy

Proponents of the ecological systemic view suggest that values and practices connected with ecological systemic thinking originate from appreciative knowledge of other systems and organisms and recognition of human's connection to it. This relates to a way of knowing that goes beyond rational approaches as they are based on symbolic, conceptual constructs and therefore are recognised as limiting (Heron and Reason, 1997). Ecological systemic thinking draws attention to current pedagogies that focus on such rational approaches, including transmissive teaching methods within education. In transmissive methodology, particular knowledge or skills are transferred to the learner, where the learner is a passive recipient of

information. This *“informative, instructive, non-participatory and less democratic”* (Sterling, 2003: 206) methodology is seen as restrictive as it is teacher-centred, and focuses on accumulation of knowledge while favouring *“cognitive objectives”* (ibid.).

Ecological systemic thinking suggests that rational knowing is extended to include **knowing by intuition** or as Heron and Reason (1997) call it, knowing through experience and participation, where experiential, participatory knowing is relational and interactive, as well as contextual as it takes place in time and space. On the other hand, ecological systemic thinking brings attention to **transformative methodology** that considers the ‘whole person’. Here processes are participatory and the learner develops knowledge by engaging with one’s context and environment (Vare and Scott, 2007 and Wals, 2009). Learners are involved in real-life discourses and practices and which highlight the complexity and uncertainty of real-life issues (Alvarez and Rogers, 2006). Active participation of the learner in such pedagogy is associated with the development of democratic involvement and responsible citizenship (Wade, 2008) which is seen as an important element of moving towards a sustainable society. Participatory pedagogies also lead to the development of competencies such as critical reflective thinking and the capacity to understand and solve problems (De Haan, 2010). Critical reflective thinking is an especially important competency in relation to sustainable development as it involves a *“deep examination of the root causes of unsustainability and engages the learner in recognising bias and the assumptions underlying their own knowledge, perspectives and opinions”* (Tilbury, 2011: 30). Learners are able to *“identify and challenge assumptions, be aware of how context influences thoughts and actions and develop and explore alternatives to existing ways of thinking and living”* (Thomas, 2009). Success of acquiring these competencies is context bound and can be engaged with, through what is known as, ‘situated learning’ (De Haan, 2010). This type of learning is more subjective, it is based not only on rational but intuitive knowing (Glasser, 2009) and is considered to produce a greater motivation to learn and interest in the matter (De Haan, 2010). Some of the participatory pedagogies that have been used within education may be found in Table 2-2 (Tilbury, 2011: 27).

Table 2-2: Participatory Pedagogies (Tilbury, 2011)

Pedagogical strategies	Learning process involved
Group discussions	The use of discussion is an attempt to counteract the risk of the tutor taking a transmissive or authoritarian approach, thereby enabling students to explore their own and others' views. The facilitator often encourages listening and self-reflection rather than argument.
Reflexive accounts	Considering their own position in relation to new knowledge about sustainability can help students understand how individual actions contribute to sustainability. This pedagogical approach provides opportunities for learners to reflect on personal roles, attitudes and responsibilities in relation to a range of sustainability issues.
Problem-based Learning	Problem-based learning is an iterative learning process that is used to teach a whole range of subject matter. In the context of ESD, a sustainability-related issue may be identified and students are asked to investigate this to generate a body of knowledge. They can then develop a vision of alternative actions and potential solutions to the problem, which they use to devise a plan of action. The action may then be carried out, followed by a period of reflection and evaluation. This process promotes both the conceptual and practical aspects of sustainability literacy.
Fieldwork and outdoor learning	Research has shown that fieldwork is an example of experiential pedagogy that can influence students' emotions and help develop the critical thinking skills so essential to understanding the complexity of sustainability. Fieldwork for sustainability is often based on issues in the local community and environs, linking theory to real-world examples.
Modelling good practice	Learning also taking place implicitly through the hidden curriculum. The research captured how many educators sought to reduce paper use and turned off lights at the end of sessions as a means of teaching learners the importance of action-taking.

2.1.4 ESD as behavioural and learning changes

While there is a need to expand education towards transformative pedagogies, it has become recognised that sustainability requires both transmissive and transformative learning, which Vare and Scott (2007) call ESD 1 and ESD 2 respectively (Table 2-3).

ESD 1 sees education as a means to an end, where increased awareness and scientific, factual knowledge about environmental, social and economic issues will lead to the cure of these issues through new attitudes and behaviours (Sterling,

2003). The cure is visible and can be measured for example through decreased environmental impact (Vare and Scott, 2007). This view implies universal rather than contextual knowledge and learning is instructive and transmissive where information and communication are important (ibid.). The change brought about through this type of learning **is necessary** as the problems of sustainable development require **urgent action**. However, the process may be defined as ‘single-loop’ learning where an individual, group or organisation actualises the goal that has been defined by others (Argyris, 1976). This is limiting for two reasons. It presupposes that there is a predetermined sustainable world that one may move towards (Gough and Scott, 2007). And because achievement is based on predetermined goals, the opportunities for learning are closed before the process has even begun (Sterling, 2010).

ESD 2 recognises that the desired state of sustainability cannot ever be specified and therefore learning is open-ended (Vare and Scott, 2007). ESD 2 uses transformative pedagogies to develop learners’ critical thinking and reflexivity to make sound choices when faced with the complexity and uncertainty of the future. This relates to double-loop learning where *“learners generate useful and valid information including relevant feeling”* to change behaviour that is based on *“free and informed choices and internal commitment”* (Argyris, 1976). In this example one questions ‘what does it mean to be more sustainable’ (Vare and Scott, 2007). The impact of ESD 2 is indicated by developing individuals who have the knowledge, motivation and empowerment to act responsibly in the face of any problem (ibid.).

Table 2-3: ESD 1 and ESD 2 (Vare and Scott, 2007)

ESD 1	ESD 2
Promoting/facilitating changes in what we do.	Building capacity to think critically about (and beyond) what experts say and to test sustainable development ideas.
Promoting (informed, skilled) behaviours and ways of thinking where the need for this is clearly identified and agreed.	Exploring the contradictions inherent in sustainable living.
Single loop learning	Double loop learning

Vare and Scott (2007) note that while ESD 1 and ESD 2 approaches may be seen as opposing, they should be viewed as complementary. They can either lead one to another in a sequence or they could happen concurrently. For example, a particular behaviour can be applied from an external source but then be internalised resulting in an attitude shift to support it. While ESD 1 and transmissive pedagogies are important in the short term, by focusing only on ESD 1, there is a risk of reducing the capacity of people to manage change. It is therefore important that ESD 2 and transformative pedagogies are a complimentary aspect in this learning process (Vare and Scott, 2007).

2.1.5 Conclusion

This section has expressed a general understanding that moving towards sustainable society means the acquisition of new values, attitudes, and practices. This requires change not only in **what** society knows, but also change in **how** society knows, with an emphasis on appreciative knowing (Barrett and Fry, 2005). However, this change is not black and white. Society needs to quickly acquire more sustainable behaviours in light of current crisis, as well as develop greater critical thinking in light of social and ecological responsibility for the future.

For the educational system this means a complex process of change. It goes beyond the adding of additional issues to be covered and taught in the curriculum. Instead, the move towards ESD can be expressed as transformation in the educational system in its entirety (Tilbury, 2011) to include both transmissive and transformative pedagogies in the context of sustainable issues.

2.2 ESD in the context of England

This section first explores the meaning of ESD as it is understood in England in theory and through evidence-based research, and then analyses the change process currently taking place within the educational system towards ESD.

2.2.1 From theory to practice

Research shows that educational systems around the world have been moving towards ESD in different ways (Wals, 2009). How they develop has been related to the context within which they take place (Tilbury, 2011). In England, there is general agreement on **what** ESD should look like within **schools** (Tilbury, 2011, Wals, 2009), known as the ‘whole school approach’ (Shallcross, 2005).

2.2.1.1 Whole school approach

‘Whole school approach’ (Shallcross, 2005) is a theory that draws on organisational change theory and describes a **desired state** for ESD (Symons, 2008, Henderson and Tilbury, 2004) where sustainable development is considered in a holistic way (Hargreaves, 2008). Within such schools, all stakeholders, including pupils and the organisation, **value** sustainability, and express this value in an **active engagement** in the ongoing development process (Sterling, 2003: 272). For example, exploration of local sustainable solutions within the curriculum would lead to a whole school participation in critical reflection (Shallcross, 2005: 4) of school culture, day-to-day school practices, school operations, and stakeholder and community involvement (Ferreira et. al, 2006 and Hargreaves, 2008). This theory highlights the participatory nature of the school ESD pedagogy **and describes a strong relationship** between **the curriculum** towards ESD and the **rest of the organisation**, both on individual and social levels.

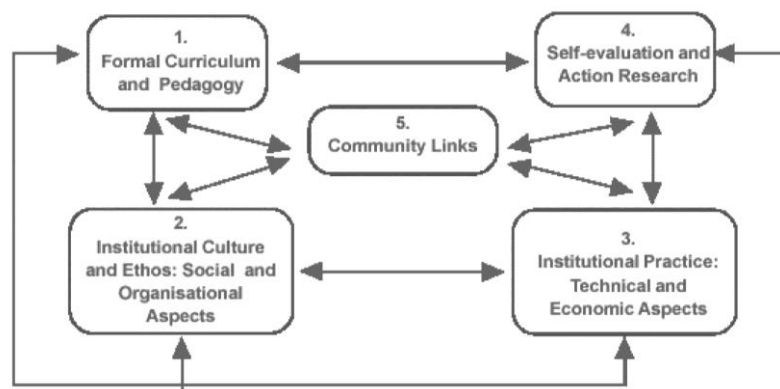


Figure 2-1: The Five Strands Of The Whole School Approach (Shallcross, 2005)

2.2.1.2 Findings from ‘best practice’ of ESD in England

The ‘whole school approach’ theory is also finding some support in the limited research on schools with ‘best practices’ in ESD that further helps to build an understanding of this phenomenon. Research studies, mainly by NGOs, have been conducted into ‘best practices’ of ESD in schools (WWF-UK, 2011). These studies sought to understand *how* as well as *where* within organisations that ESD takes place.

This evidence-based research (Birney and Reed, 2009) found that sustainable development within each sustainable school is **unique**, based on the school’s context including characteristics of its local community, human and financial resources and institutional capacity (WWF-UK, 2011). Further, sustainable schools require **leadership** that is set between personal authority and distributed leadership (including pupils, staff and community), where leadership is based on **grounded purpose, values, vision**, and commitment (Birney and Reed, 2009). Sustainable schools also exhibit **action learning process** that involves planning, action, monitoring and reflection on ESD engaging all school stakeholders (WWF-UK, 2011). In particular, it involves embedding ESD into a school’s ethos and development plans, integrating ESD across the curriculum, engaging pupils with real life issues, modelling school management practices, integrating with other educational policies and initiatives and monitoring and evaluating progress (WWF-UK, 2011). Sustainable schools have also been found to employ participative approaches between teachers and pupils. The approaches are contextual and focus on real-life and problem-based learning. These findings further show participatory processes that are based on values and the vision of all school stakeholders, where pupils are not only active participants in their learning but are also developing as ‘responsible citizens’.

2.2.1.3 Common characteristics of ESD

While there is no definite understanding of what ESD in its holistic meaning **might look like** in English schools, some discussion may be found in theory of ‘whole

school approach’ and evidence from the ‘best practices’ in schools. In this literature, the overlapping suppositions of **what ESD** in English schools could be, has been identified. For the purpose of this research these suppositions are presented as common characteristics of ESD in English schools in Table 2-4:

Table 2-4: Common Characteristics Of ESD In English Schools

1. ESD is situated within individual schools and is unique to the school.
2. ESD is based on organisational and social value of sustainability.
3. All elements in the school are integrated, change in one will require change in others (pedagogy, structure, processes, ethos).
4. The whole school is engaged in the active learning process towards ESD.
5. Active learning presupposes participatory pedagogy of the students and ‘social learning’ of other stakeholders.

2.2.2 ESD change process in England

From the evidence above, it may be concluded that there is some understanding of what ESD should look like in practice in English schools. It may be suggested that **change process towards ESD** should seek to support all of the above mentioned characteristics of a sustainable school to aid it in engaging with ESD 1 and ESD 2 together. The research however suggests that although the primary educational system in England has been experiencing some facilitation of change towards ESD for the last 20 years (Bourn 2008) with support and leadership from the government, NGOs and individual teachers, it continues to be an **agenda of the very few individual** schools that place ESD at the heart of what they do (Ofsted, 2008, Scott, 2009, Blum and Husbands, 2009, UNESCO, 2010, WWF-UK, 2011). In the majority of institutions, the work **is found on the periphery of schools’ activities** (Ofsted, 2008), located in the ESD 1 domain. This means that change towards ESD continues to **be slow and incomplete** (UNESCO, 2010, WWF-UK, 2011).

The urgency that sustainable development issues present on a global scale (UKNC UNESCO, 2008) as well as the vision of the government for all schools in the UK to be sustainable by the year 2020 (DCSF, 2008), necessitates a **planned change**

strategy that will **facilitate**, motivate, support and guide schools that are less proactive to move forwards with an ESD agenda. However, it is unclear why the effort to create change in schools has, until now, led to only a partial outcome.

Kennedy (1987) argues that, in education, change is commonly based on intuition and there is a lack of change management practice. Therefore, **to better understand change in the English educational system** it should be recognised that change within social systems may happen in different ways: rational-empirical, power-coercive and normative re-educative (Kennedy, 1987). Becoming aware of change strategies that are also applicable to various fields may lead to planning change with more certainty and give change process *“a strong cognitive component”* (Kennedy, 1987 : 169). In the following sections, the three common types of change strategies are introduced and applied to analyse current development in ESD within the English primary educational system to develop a better understanding of the situation.

2.2.3 Change strategies

The classical human system change theory suggests that there are three major strategies of change within any social system (see Table 2-5): rational-empirical, power-coercive, and normative-re-educative.

Table 2-5: Change Strategies (Miles et. al, 2002 and Skorheim, 1986)

Rational-empirical	Power-coercive	Normative re-educative
<ul style="list-style-type: none"> - People are rational. - Change is due to fact-based knowledge. <p>Change strategies</p> <ul style="list-style-type: none"> - Research and dissemination - Selection and promotion of personnel based on a consistent knowledge base. - Use of technology. <p>These strategies have elements of power, as those who have knowledge have power.</p>	<ul style="list-style-type: none"> - Emphasis on political and economic sanctions as the principles strategy to bringing about change. <p>- Political/Position: Change through policies, directions, laws and other legal agreement</p> <p>- Economic Power: Change through financial incentives.</p>	<ul style="list-style-type: none"> - People are rational and intelligent. - Change of social and personal norms and values. - Collaborative problem solving with all members affected by change. - Personal growth and development of system members. - Redesign and restructuring of the system to maximize participation and involvement of system members. <p>These strategies focus on developing power, both personal sense of power and/or organisational power</p>

Kennedy (1998) notes that in the rational-empirical and power-coercive perspectives (Table 2-5) the change occurs in one direction, either those in power forcing others to change or the information is provided to the people who need to act on it. Change in the third strategy is discovered, developed and adopted collaboratively with participation from all those affected by the change, making a decision on its degree and manner. The third change process gives consideration both to personal norms, values and habits, as well as to the broader system and culture of environment (Miles et. al, 2002 and Skorheim, 1986). Main strategies for this change are collaborative problem solving, redesign and restructuring of the social system, and personal growth and development of system members.

As previously mentioned change towards ESD in the English primary educational system originated with the government, NGOs, and the schools themselves, although with limited progress. The next section will seek to analyse **what types** of change **strategies** have been applied so far, why they have not been very successful, and what type of change strategy has been considered least.

2.2.3.1 ESD change through government

Some of the one-directional changes that originated with the English government may be seen as power-coercive and empirical-rational. In 2005, the UK government committed to taking action as part of the United Nations Decade of Education for Sustainable Development 2005-2014 and launched *Securing the future: Delivering a UK sustainable development strategy* (Huckle, 2009). The strategy sets a clear goal for the UK public sector to move towards sustainable development and for all government departments to develop a Sustainable Development Action Plan (SDAP) to convert strategy into action (SDC, 2005).

As part of this strategy, the English government updated the formal curriculum to include 'global citizenship and sustainable development' as one of the cross-curricular dimensions (UKNC UNESCO, 2008). It also published *The global dimension*

in action: A curriculum planning guide for schools, with sustainability described as part of the global dimension (UKNC UNESCO, 2008). The motivation for schools to comply with such power-coercive change strategy would come from the desire of each school to be recognised as an effective educational service provider or risk being deemed a 'poor' service provider and therefore be in danger of being closed down. However, the research shows that the Office for Standards in Education, Children's Services and Skills (Ofsted), a governmental body that is responsible for inspecting and measuring how effective schools are, **has not been emphasising sustainable development during its school visits** (Bourn, 2008). As a result, while some individual teachers embedded a few sustainability issues into their curriculum, most schools did not view it as being crucial to their overall achievement and did not take time to pursue it (Symons, 2008). This top-down, power-coercive strategy then has not been effective in motivating schools to bring about change to their pedagogy.

In addition, the government has developed a Sustainable Schools Strategy to help schools on the journey towards sustainability (Bourn, 2008) with a goal for all schools to become sustainable by the year 2020 (Ofsted, 2008). The Sustainable School Strategy, organised under the National Framework, considers value of care for oneself, care for each other (across culture, distances and time) and care for the environment (near and far) (Blum and Husbands, 2009, and DfES, 2006). These values are to be addressed through school's curriculum, community and campus (Scott, 2009). To help schools to do this, the government has developed "eight doorways" which are themes that can be used as entry points for schools to initiate their work on sustainability and include 'best practice' ideas for achievement that will help schools to operate in a more sustainable way (Birney and Reed, 2009). This strategy may be considered to be **empirical-rational** as it is based on 'good practice' of a small pocket of sustainable schools and is not mandatory. It therefore relied on voluntary uptake from the schools, with little success (Ofsted, 2008). The framework was designed to overlap with needs of already ongoing mandatory agenda of Every Child Matters (ECM), that is well defined and which Ofsted assesses for compliance. It is a child-centred initiative that recognises that children need to be healthy, stay safe, enjoy and achieve, make a positive contribution and secure

their economic well-being. It has been suggested that limited activity that schools do with regards to sustainable development, is the result of work they were doing for ECM agenda rather than as a result of the framework (Vare and Scott, 2007.).

While the government perceived sustainability as an improvement strategy for schools (DfES, 2006), and aspired for all schools to become sustainable, neither Sustainable School Strategy nor the changes in the curriculum were mandatory (UKNC UNESCO, 2008). Some of the changes have been implemented by individual teachers in schools, yet in most cases they were ignored. It may be suggested that governmental rational-empirical strategies alone do not provide enough motivation for schools to change, whereas power-coercive strategies seem to be missing an important element, the 'use of sanctions'. One of the explanations is the inability of the government to measure the effectiveness of ESD due to the lack of a set of indicators and targets for ESD in the UK (Huckle, 2009). This may be due to absence of one 'right' answer to ESD and the need for both quantitative and qualitative indicators, with the latter being more difficult to measure (Huckle, 2009).

2.2.3.2 Change through NGOs

In England, sustainable development in schools has also been supported by NGOs since the early 1990s (Bourn 2008, Bell, 2007). Third sector organisations historically focused on campaigning and creating awareness on a particular environmental issue within an environmental education agenda (Blum and Husbands, 2009) and in recent years this has expanded to include other sustainability issues (for example, the Council for Environmental Education was changed to the Sustainability and Environmental Education (SEEd)) (UKNC, 2010). Most of the work within the sector is rational-empirical as it is based on promoting 'good practice'. The evidence from NGOs suggest that their work results in some success within schools, yet it has also been demonstrated that most change is carried out by a few individuals and is limited to the NGOs fixed value with most work concentrated on the issues of climate change (UKNC, 2010). Most of the work also focuses on a particular behaviour change (Vare and Scott, 2007). For example, a national 'Switch it off'

campaign that encourages people to switch off lights (Actonenergy, 2013) or an international Eco-Schools programme that promotes specific local action in schools (Eco-Schools England, 2013, Henderson and Tilbury, 2004).

Table 2- 6: ESD Change Processes Found in England

	Power-coercive	Rational-empirical	Normative re-educative
Type of ESD/pedagogy change	ESD 1/transmissive	ESD 1/transmissive	
Tools to support change in English primary educational system	Governmental: Curriculum change ECM Agenda (National Framework)	Governmental: '8 doorways' (National Framework) NGOs: Individual issue campaigns Awareness raising workshops Eco-schools program	
Recorded impact	No recorded impact through curriculum change Organisational change have been recorded due to ECM agenda	Impact has been seen in behaviour change of many schools, mostly targeting individual issues	

The above review shows that the most prevalent strategies to move schools towards ESD in England are power-coercive or rational-empirical (see Table 2-6). Unlike power-coercive strategies that have been shown to have little effect on the schools, rational empirical strategies have seen more success with high numbers of schools enrolled into different NGO programs (Eco schools England, 2013). However, the limiting factor of this type of change is that it promotes specific behaviours and therefore lends itself to 'transmissive education' or ESD 1 only (Vare and Scott, 2007, Reed, 2009). Based on Vare and Scott (2007) change needs to occur both in ESD 1 and ESD 2 levels, where transmissive and transformative pedagogies situated in the context of sustainable development are applied. This

creates space to explore a different type of change strategy that might support change towards holistic ESD 1/2.

2.2.4 Normative re-educative strategy and tools

The third type of planned change strategy, normative-re-educative, **has not been fully considered** within the English primary educational system. From the above mentioned section, this strategy situates itself within a particular social or organisational system. For the purpose of this research it may be considered as **change situated within schools**, where schools are defined as organisations (Davidoff and Lazarus, 2002). In the recent years, some work is beginning to take shape that may be said to be in accordance with this strategy, although there is no direct mention of this relationship, particularly some tools have been developed to support it. However, for the few tools that have been developed there is no known evaluation of their use yet and when analysed closer, there seems to be a limitation within their individual designs. The next section seeks to take a closer look at these tools.

2.2.4.1 Pathways

Pathways (WWF-UK, 2004 and WWF-UK, 2011) is a practical guide to sustainable development developed by WWF-UK, to be used in the schools who seek to become more sustainable. It is a set of discussion and decision-making activities and three project planning tools to integrate ESD into the school planning process that every

school engages with regularly.

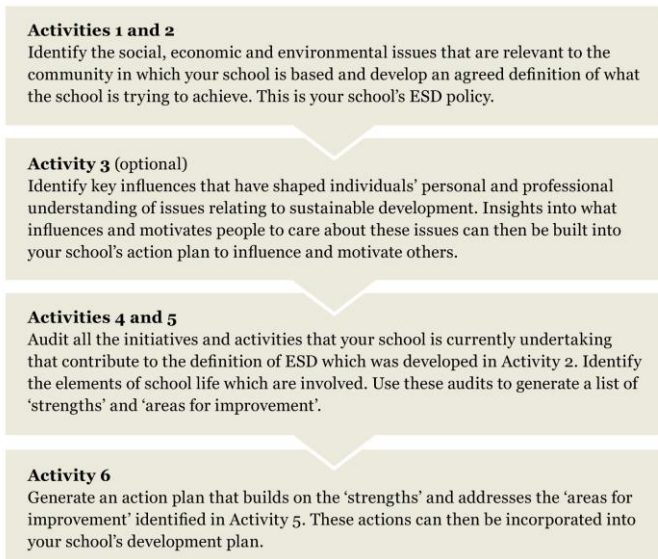


Figure 2-2: Pathways Tool

The activities (see Figure 2-2) set out action to be taken collaboratively throughout the change process, during which school leaders consider organisational practices in relation to three dimensions of sustainable development, reach a common vision to ESD, and generate an action plan. Tools are also provided to evaluate if the school reached its goals set out at the beginning of the change process (WWF-UK, 2011).

2.2.4.1.1 Pathways tools analysis

While the guide gives consideration to the collaborative problem-solving activity, its focus is on the participation of the school staff. It mentions the importance of pupils' participation, yet the activities are not designed **to involve nor consider** pupils' voice throughout most of the development stages.

The guide places a great importance on exploring and developing an understanding of the organisation in relation to sustainable development, yet it places **little emphasis** on the **cultural aspect of the organisation** and provides little room for exploring the relationship between the **personal values and motivations** of individuals in relation to organisational norms and vision (as denoted by an 'optional' activity 3). In addition it presupposes that participants have sufficient knowledge on ESD, and draws no distinction between ESD 1 and ESD 2.

Also, while considering problem solving as a strategy for change, bringing to light areas such as curriculum and organisational processes where the change could happen, the tool **does not stress their interconnectivity**, which lies at the core of the ‘whole school approach’ and could lead to change on the periphery of the school.

2.2.4.2 Sustainable school self-evaluation (s3)

S3 (see Figure 2-3) tool provides a way for schools to record and report their effort to promote sustainable schools as part of the routine self-evaluation. Basing itself on the governmental National Framework it provides space for the schools to reflect on their action within themes of 8 doorways and three areas of curriculum, campus and community. By helping the schools’ reflection upon their current work, the tool aims to help identify areas for further development.

2.2 To what extent do the teachers and staff participate in school decision-making?				
Grade (Please check appropriate box)				
Getting started	<input type="checkbox"/> Satisfactory	<input type="checkbox"/> Good	<input type="checkbox"/> Outstanding	<input type="checkbox"/>
Communication with teachers and staff focuses on keeping them informed about what’s happening at school.	We have a strategy or mechanism for the participation of teachers in school decision-making. We solicit their comments and suggestions about a range of issues.	Teachers and staff participate fully in school decision-making. Their recommendations are acted upon. We have evidence of how this benefits teachers and staff.	We have evidence of how this contributes to school improvement and community development. We share our practice with others.	
Explain your grade. Write an evaluative statement and include examples of action taken based on teacher and staff participation, as well as references to relevant evidence or data.			What are your key priorities for development?	

Figure 2-3: Extract From Sustainable School Self-Evaluation Tool (S3) (Ofsted, 2006)

2.2.4.2.1 S3 tool analysis

The tool (see Figure 2-3) encourages collaborative discovery and reflection on the school’s action towards sustainable development and therefore its purpose is only

to support the **first or last stages** of the change process that a school might undergo. There is no consideration to support the development and action planning stages that are intrinsic to normative re-educative change process.

In addition the evaluation criterion is based on the National Framework, which in turn integrates some elements of the 'whole school approach'. However, there are a few missing elements. Evaluation considers an organisation's processes and activities, but **no consideration** is given to the organisation and **stakeholders' norms and values**. In addition, curriculum, campus and community elements are analysed separately, with little understanding to how they integrate.

Also, the S3 tool is to be used by senior management which is responsible for writing general self-evaluation reports for Ofsted (Ofsted, 2006). This means that although "*pupils are at the center of interest in the sustainable school*" (Ofsted, 2006: 4) **their participation** as well as the participation of the majority of school stakeholders is **not considered** in this process of analysis and reflection.

2.2.4.3 Leading for the future (LfF)

LfF (Blair, 2011) is a program created to develop sustainable school leaders. It is based on the notion that sustainable schools are developed by individuals whose

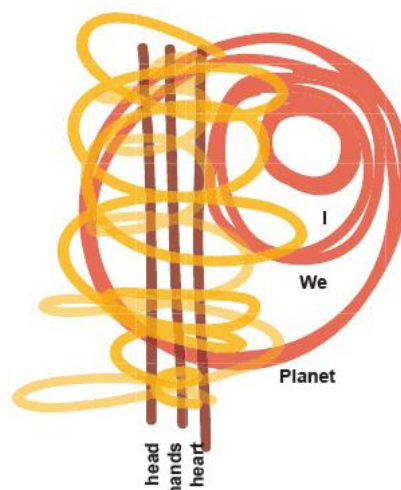


Figure 2-4: Matrix Used In The LfF Program To Guide Process Of Change.

leadership is underpinned by personal passion, values and philosophy associated with sustainability (Jackson et.al, 2007). The program focuses on the experiential learning of leaders, bringing leaders together outside of their usual environment, in a 'hosted space' to stimulate , through a series of practices, a deep reflection about self, one's values, others and links to the natural world and interconnectedness through cognition, emotional/spiritual dimension and physical activity (see Figure 2-4). The program was piloted in 2011 and is currently undergoing evaluation.

2.2.4.3.1 LfF tool analysis

From the normative re-educative perspective, this tool places emphasis on the values and norms of the few leaders and their interrelationship with the broader environment. However, because in this scenario the change process is happening outside of the schools, **the consideration to the organisational environment** takes place in abstract terms, rather than being **grounded in the real needs of the school**. Further, the focus is on change by a **few individuals** rather than the whole school and it is focused on the 'discovery' stage rather than development and action planning stages of the change process.

2.2.4.4 Normative re-educative strategies conclusion

Closer examination of the few recent tools (see Table 2-7) that have been developed to support normative re-educative change strategy, shows that no tool exists that considers all the necessary elements for such change to take place within the school. Only one tool considers the holistic **process of collaborative problem solving**, whereas the other two focus on one or two stages within it. None of the tools however, support the change process **where norms and values of both individuals and the organisation** are considered together, instead focusing either on one or the other. Also, organisational dimensions, such as school culture, processes and structure, are presented separately rather than as an integrated whole, as they are in the 'whole school approach'. In addition, the tools do not support participation or at least the voice of all school stakeholders, favouring change process to be led by some individuals rather than the whole school.

Therefore engaging with these tools may lead to a change process that is incomplete or continues to stay on the ‘periphery’.

Table 2-7: Tools That Support Normative Re-educative Change Process in English Schools

Tools of normative re-educative strategy in English schools		
Tool name	Purpose	Limitation
Pathways	<ol style="list-style-type: none"> 1. Guide to comprehensive collaborative problem solving process. 2. Considers organisational processes and structures in relation to the broader environment. 	<ol style="list-style-type: none"> 1. No consideration of the pupils’ participation/or voice. 2. Does not consider organisational or social values and norms.
S3	<ol style="list-style-type: none"> 1. Guides collaborative discovery and reflection on sustainable actions. 2. Considers organisational processes and structure in relation to the broader environment. 	<ol style="list-style-type: none"> 1. Little support to development and action planning stages. 2. Does not consider organisational or social values and norms.
Lff	<ol style="list-style-type: none"> 1. Guides reflection on individual norms and values in relation to sustainable development. 	<ol style="list-style-type: none"> 1. No consideration of organisational norms, values, processes or structures. 2. No support for collaborative development process

Lastly, Pathways and S3 tools presuppose the initial interest from the school to drive the change towards sustainable development. However, recent research by Snell and Brooks-Wilson (2012) concluded that schools that have taken limited action towards ESD will be even less motivated to engage with change as the current government diverted their involvement with the ESD agenda.

2.2.5 Conclusion

While there is little understanding of what ESD means for English schools in practice (Reed, 2009), this section sought to draw out some of its common characteristics based on a theory of the ‘whole school approach’ and limited research on schools with ESD ‘best practices’. The relationship between the outcome and the process of change (van de Ven and Poole, 1995) suggests that identifying what the change might be, clarifies the particulars of what change process towards ESD in English schools should support. In particular, some of the important factors may be said to

be: **the change in the pedagogy to be integrated with other components of organisation, including its culture where social and organisational values need to be considered, and an ongoing participation of all school stakeholders within the change process.** However, research suggests that the current change processes lead to an incomplete change within the majority of schools. Closer examination of literature on planned ESD change strategies in the English primary educational system revealed that one of the reasons may be due to the type of planned change strategy employed. In particular, normative re-educative strategy was found to have least evidence in literature, yet its description suggests that it is the type of strategy that would most likely lead to the development of the above mentioned sustainable school characteristics. There are few tools that have been identified to support this change strategy, but their review suggests that they do not support the strategy in its totality.

This section therefore identified a link between normative re-educative planned change strategy and the desired state of ESD in English schools. It also pointed out the presence of slow and incomplete change in schools in light of the sustainability crisis, which presents a need for an 'outside-in' facilitated change. The absence of tools to support all the necessary elements for successful change reveals a gap in knowledge and an opportunity for this research.

2.3 Service Design as a normative re-educative change process

In this section Service Design is introduced as an emerging area in design. It is explored as an approach of an 'outside in' planned change in services and is correlated with the normative re-educative change strategy. The appropriateness of this approach is based on the above mentioned definition of education in the UK as a public service provided by service organisations, the schools.

2.3.1 Introduction

If there is a need for a planned change strategy, it may be said there is a need for Design. Design by its nature is an instrument for creating a planned change (Nelson and Stolterman, 2003) and is situated within the needs and aspirations of human beings. Traditionally, the design process of "*planning and conceiving the artificial*" (Buchanan, 1992) aimed to create 'products' that helped people to accomplish their individual or collective purpose (Buchanan, 2001). Recently, however, designers have been reconceptualising the meaning of a design 'product' and rethinking where the **value of design** could be placed. As a result, 'products' expanded their meaning to also include **actions** and **experiences**, as well as all-encompassing **human systems**, such as services (ibid). In addition, private and public services have traditionally been approached through a process of 'trial and error' or unplanned change. This process had a negative effect, which is exemplified by the many instances of poor services where change leads to few improvements or may have 'unintended consequences' (Hartley, 2005). Literature on service management recognises that these failures are happening due to a lack of design approach to service development. Although it may be argued that anyone "*who devises courses of action aimed at changing existing situations into preferred ones*" (Simon, 1996) is involved in the process of design, a direction for a new design area was established when the research suggested that it is the intentional design approach rather than 'silent design' (Gorb and Dumas, 1987) that is required, in order to create a successful change in services.

2.3.2 Service Design approach

Service Design then is an emerging area of design that seeks to apply design process, methods and principles to the design of service organisations, services, and other social systems, supporting and facilitating their development and improvement (Holmlid, 2007 and Mager, 2004). It is an 'outside in' approach (Holmlid, 2012) where its process may be described as an iterative process of inquiry and action (Steen et.al, 2011). It couples practices of 'research orientation' or understanding the past and current situation and practices of 'a design orientation' that focus on exploring and envisioning possible futures (Steen et.al, 2011). At the same time, Service Design is a broad discipline with input from theories and methodologies of service management, marketing, human-centred design (HCD), user-experience design, product and interaction design (Polaine, 2012). The influence of Service Design within service development has been expanding, from improving services offered at the periphery of the organisations (Clatworthy, 2011) to re-defining models of public services from within the organisation as a response to the increasing complex nature of economic, social and environmental issues (Mulgan and Albury, 2003 and Cottam and Leadbeater, 2004).

2.3.2.1 Service design and depth of change

Therefore it is important to recognise that service designers may have an impact at different levels of depth that results in different outcomes based on the Service Design methods used. Junginger and Sangiorgi (2009) developed an 'orienting framework' (see Figure 2-5) that correlates the **intended depth of change** in the service with the **level of depth into an organisation** that Service Design may have.

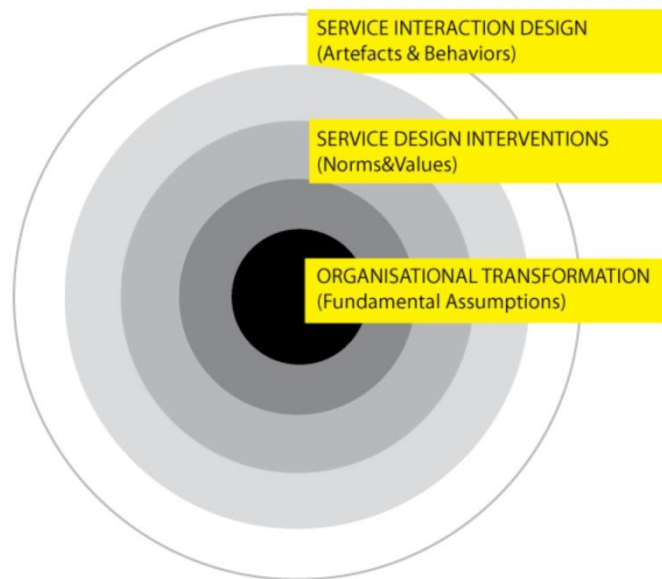


Figure 2-5: Orienting Framework (Junginger and Sangiorgi, 2009)

If the change does not question the assumptions of the organisation, then service designers are likely to work on the periphery of it, improving or creating new artefacts while using methods of interaction design. If the change questions the values of the organisation, where organisational restructuring around a new service experience needs to take place but it is not a radical one, service designers might have to intervene at some organisational level. However, if the **new concept** requires organisational transformation, then service designers' will work with the fundamental assumptions of the members of the organisation. In particular, they would use the process that constitutes *'design inquiry as a conversation with members of the organisation'* to disclose and acknowledge the fundamental assumptions and how these give form to the present situation. They would then work together to create an *'agreed vision for where the service should evolve'* and then *'co-create agenda for change'* (Junginger and Sangiorgi, 2011: 4346).

Table 2-8: Service Design Principles, Tools And Methods Used At The Organisational Transformational Level, based on Junginger and Sangiorgi, 2009

PRINCIPLES, TOOLS AND METHODS USED AT ORGANISATIONAL TRANSFORMATIONAL LEVEL
Service design inquiry as conversations
When applied to the inquiry stage of the design process, collaborative tools and methods seek to understand the use situation as it is experienced by the system stakeholders (Wetter-Edman, 2009). They draw on the nature of services as defined by Service-Dominant logic (Kimbell, 2011) and view stakeholders as active participants in value co-creation as well as ‘experts of their experiences’ (Visser et al., 2005 cited in Steen, 2011: 52). Empathic tools and methods such as storytelling, emotional mapping (Szebeko, 2011), empathic conversations (Raijmakers et.al, 2011) and expressive service blueprints are used to explore (Spraragen, 2011) with stakeholders their experience and ‘co-experiences’ (Sangiorgi and Meroni, 2011) of all the elements within the service system. Junginger and Sangiorgi (2009) and Bate et al. (2000), whose case studies occur at the deeper level of the organisation, recognise that use of the tools alone will not bring depth to the inquiry. Instead designers need to be aware of and be able to engage with the ‘soft structures’ of the social systems, the deep-seated assumptions and values of participants, as well as the resistance to change.
Service design as vision co-creation
Vision co-creation is a generative, and at the same time, an inquiry stage of the service design process. The tools used at this stage focus on constructing a shared meaning and vision from the research stage (Sangiorgi and Meroni, 2011), yet the process lends itself to continual reflection on a social system’s values, norms and understanding. This divergent process enables ‘social creativity’ through tools and methods that let stakeholders externalise and visually represent information, react to it and converse about it (Warr and O’Neill, 2005). Participative scenario building techniques and collective storytelling (Jegou, 2011) are some of the tools and methods that can be used during vision co-creation. These tools help stakeholders to materialise ideas into narratives (Jegou, 2011) while leaving real issues about change to continue to be unresolved (Winhall, 2011).
Service design as co-creation of agenda for change
The last stages of the design process necessitate activity during which the vision is collaboratively developed and explored through prototypes. The vision is elaborated and is detailed through methods and tools such as storytelling techniques, storyboards, and video and photo sequences (Stickdorn and Schneider, 2010). The prototypes are usually created in reality or in circumstances that are close to reality (Stickdorn and Schneider, 2010). Prototypes help those who will implement the change to check its feasibility (Sangiorgi and Meroni, 2011). Tools such as staging, role play (Stickdorn and Schneider, 2010), living labs (Mitchell, 2011) and experience prototypes (Cantu et al, 2012) are examples where participants model the change collaboratively, monitor it and evaluate the ideas for implementation. There is a need for developing a ‘space’ for such prototypes within the organisations. The role of service designers throughout all stages is to facilitate and support the collaborative processes.

The deepest level of change, also known as ‘transformative’ (Sangiorgi, 2011), is usually embedded in social systems where the aim **is to achieve a vision of change**,

which is of value to all participants of the system and therefore is realizable (Fowles, 2000, Pedersen and Buur, 2000). Service design emphasises stakeholders' participation and draws on user-centred design (UCD), human-centred design (HCD), co-design and participatory design methods and tools to involve the stakeholders in the design process of inquiry and action (Steen, 2011) (see Table 2-8). The purposes for involvement of participants in such work is 'collaboration and emancipation' (Lee, 2007), where the focus is not on creating solutions but on developing **organisational capacity to deal with change**. This level of change is usually found when Service Design is working **on issues of public sector and wellbeing** (Sangiorgi, 2011). For example, cases can be found within the areas of local government, local communities and healthcare (Cottam and Leadbeater, 2004, Szebeko, 2011, Pacenti, 2011, Bate, et al., 2000).

2.3.3 Service design as normative re-educative change

Sangiorgi (2011) brings to attention the emerging element of the Service Design discipline, and notes that it *"has not yet developed any particular reflection on its relationship with knowledge generation, power and change"* (ibid.). However, the Service Design process at the deepest level of organisational transformation, with its focus on 'participation' and 'emancipation', can be correlated with normative re-educative change strategy. Principles defined in Table 2-7 may also be found in the seven Service Design principles that Sangiorgi develops when relating Service Design to normative re-educative change strategy (Sangiorgi, 2011) (See Table 2-9).

Table 2-9: Principles of Service Design That Support Normative Re-educative Change

Seven Principles of Service Design in public services
1. Active citizens
2. Intervention at community scale
3. Building capacities and research partnership
4. Re-distributing power
5. Enhancing imagination and hope
6. Building infrastructures and enabling platforms
7. Evaluating success and impact

2.3.3.1 Service design as normative re-educative change in NHS

Whilst there are no explicit examples of Service Design being used as a normative re-educative approach, the work service designers are doing within the NHS may be considered to be an example of work happening on this deep level. The change is based on the new vision of the government for the NHS to design 'patient-centred' services (Bate and Robert, 2006), a new service experience provided to the patient, which is based on the needs of the patients and encourages a collaborative approach to its delivery. In this example, service designers are guided by the principles of patient-centred service, which is congruent with service thinking that Service Design methods and approaches are based on, in particular human-centred design (HCD) and experienced-based design (EBD) (Bate and Robert, 2006). Both HCD and EBD approaches therefore have been researched as a way to improve NHS services based on patient experiences (Bowen et al. 2010, Bate and Robert, 2006), and as a way to support and enable transformation of the service to a more collaborative service provision model (Carr et al., 2009).

2.3.4 Conclusion

The discussion in this section has introduced an emerging discipline of Service Design, and its expanding scope of activity to create a deep, transformative change in services and service organisations. This activity, with its principles, processes, tools and methods has been recently compared to normative re-educative change strategy making it relevant to this research.

Whilst the aim of any Service Design process is to develop or improve services, the choice of methodological tools used by service designers is guided by understanding what constitutes such change in a service (Cipolla, 2012), as is exemplified by the work of Service Design in the NHS. Therefore, developing a greater understanding of ESD as a change in the service is an opportunity to support and explore the contribution of Service Design with this issue (the relationship between Design and ESD has been suggested in Sterling's thesis (2003)), creating opportunities for a Service Design contribution in the field of education and sustainability.

2.4 Chapter conclusion

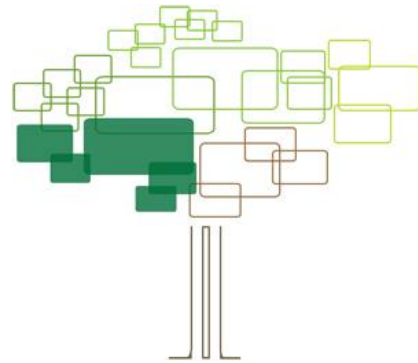
This chapter sought to create a background to the research by achieving the first objective of reviewing literature around the phenomenon for this project.

Although international discourse continues to develop the meaning of ESD, the review of the literature suggests some consensus (Reed, 2009) of the vision of ESD that has been presented for the purpose of this research. This includes the need for **new ways of knowing** which presupposes **participatory pedagogy and social learning** of all the stakeholders in the context of sustainable issues. The literature also highlighted that change towards ESD is a **complex process** that depends on the particular educational system. The English primary educational system has been selected as a context for this research. Review of ESD in this context revealed the misalignment between the change strategies applied within the system and the intended change within schools, pointing out that change strategies that are currently used lead to ESD 1 and not holistic ESD1/2. Normative re-educative change strategy was underscored to have potential to improve the situation. Unfortunately this strategy in relation to ESD, is shown to be in its very early stages of development, which could be a result of little recognition for such strategy. The review of the design of some tools that may be considered to support normative re-educative change has shown that they do not consider most of the elements of the change strategy to support it in its totality. In addition most tools are developed for self-initiated change, whereas there is a strong argument that ESD change necessitates external facilitation. The latter two statements define an unattended gap within change towards ESD in English schools that requires urgent attention in light of a sustainability crisis.

The findings of this chapter indicate the relevance of Service Design to the problem of ESD. In particular when Service Design is working with an objective to transform public services and public service organisations, its process can be congruent with normative re-educative change strategy. However, as literature indicates, Service Design has been mainly working within the domain of health care services, where a

greater understanding of necessary change in relation to service design has been developed. Unfortunately, such relationship has not yet been considered between Service Design and the change towards ESD. This therefore presents an opportunity to develop a guide to inform Service Design and further establish the relationship between the two areas. The following chapters build on the attainment and development of the aim and objectives set out for this research.

3 Methodology



This chapter outlines and justifies research design used in this project. It defines the research strategy and discusses data collection and analysis methods and techniques used in all stages of the research.

3.1 Introduction

Research can be defined as exploration in the pursuit of knowledge (Rugg and Petre, 2006). Unlike other types of knowing, research follows a systematic process during which data is collected, analysed, interpreted and is put forward to use (Mertens, 2009). The process is led by a series of decisions made in relation to the goals, research purpose, research questions and strategies for gathering and analysing data (Marshall and Rossman, 1999).

The process by which these decisions are made depends on the type of research that is being conducted. Research may be **fixed**, or pre-specified, where most component requirements have been set and defined prior to the research being carried out. Such research is most appropriate for situations where there is control over situations and it is carried out in the laboratory (Robson, 2002). An alternative type is **flexible research**. With minimum pre-specification to the components, the design of the research evolves, develops and ‘unfolds’ (Robson, 2002) throughout the project. It is usually situated in the *real world* and it is to the flexible type of research that this project adheres.

3.2 Goals and research purpose

In flexible research, initial research arises as a result of the real world observations. A literature review is then carried out to bring these observations into focus (Marshall and Rossman, 1995). This interplay between tacit knowledge and formal

knowledge constitutes a conceptual framework that is an initial guiding component of this research project.

The concern about the external world and the need to change society to become more sustainable through education has become a personal aim for the researcher. The initial training of the researcher as a designer has led to a question and a **personal goal** to find the means to engage designers in contributing to education for a sustainable future. Personal goals play an important role in flexible studies (Maxwell, 2008) and in this research, it led to the decision regarding the initial research topic.

For the personal interest of the researcher to become a research aim, it needs to develop into a more formal concept and consideration from literature (Marshall and Rossman, 1999). The review of related literature has been carried out as part of this research (see Chapter 2) highlighting the gap in knowledge about the relationship between the two fields, Design and Education for Sustainable Development. However, the literature review did reveal possibilities for the integration of the two fields, particularly when ESD was defined as change in a service at an organisational level and Service Design as a design discipline that enables transformational change in a service. These concepts led to further questions that reflect **intellectual goals**, focusing on a more in-depth **understanding** of the integration between service design and ESD.

The review of literature and the highlighted gaps in knowledge in literature lead to the development of the conceptual framework or a “system of concepts and assumptions” (Maxwell, 2008) that supported the research and led to the formulation of the research problem (see Chapter 2). The main research problem is to investigate opportunities for Service Design to enable ESD within educational institutions thus expanding Service Design practices and knowledge in the field.

There are different reasons for carrying out an inquiry (Table 3-1) including to explain, to describe, to explore or to emancipate (Robson, 2002) The study may be concerned with more than one purpose, yet one purpose will be predominant (ibid.). The principal aim of this research is exploratory, as it sets out to investigate

the opportunities of Service Design and ESD, however, the study also has an undertone of emancipatory purpose of creating knowledge and opportunities for Service Design in the context of ESD. The purposes of the study further support and inform the description of the research to be flexible in its nature.

Table 3-1: Classification of the purposes of enquiry (Robson, 2002: 59)

Exploratory	To find out what is happening; particularly in little-understood situations To seek new insights To ask questions To assess phenomena in a new light To generate ideas and hypotheses for future research Almost exclusively of flexible design
Descriptive	To portray an accurate profile of persons, events, or situations Requires extensive previous knowledge of the situation etc. to be researched or described so that you know appropriate aspects on which to gather information May be of flexible/fixed design
Explanatory	Seeks an explanation of a situation or problem, traditionally but not necessarily, in the form of causal relationships To explain patterns relating to the phenomenon being researched To identify relationships between aspects of the phenomenon May be of flexible/fixed design
Emancipatory	To create opportunities and the will to engage in social action Almost exclusively flexible design

3.3 Research questions

The aim of the research is to answer the research questions which are at the centre of the systematic research plan: they focus the study and they provide guidance to conduct and validate the study (Maxwell, 2008). Research questions are informed by the purpose of the research and the type of research that is being carried out. In particular, flexible research allows for research questions to be **discovered** throughout the research process whilst being linked to the research purpose (Marshall and Rossman, 1995).

Table 3-2 provides a list of research questions asked and answered during this research. Most of these questions were discovered as a result of the research process. The initial topic identified by the researcher and previous knowledge of the design field and ESD led to Question 1, which was investigated through the literature review. Although a link between Service Design and ESD became more clear in theory, in order to carry out further research, an understanding of ESD vision in practice, at an organisational level, became evident leading to Question 2. If the results from Question 2 were to be useful in the context of Service Design, an element of translation and appropriating had to take place. This need gave rise to Question 3. Question 4 builds upon all the previous questions and aims to answer the overall purpose of the research.

Table 3-2: Research Objectives and Questions

Research Objectives	Research Questions
1. To critically review literature around the concepts of ESD, the current state of change processes towards ESD in the English primary educational system and their relationship to three planned change strategies of human systems, transformational change and Service Design approach.	1. What is the relationship between Service Design and ESD?
2. To develop an understanding of ESD as change at an organisational level.	2. What do schools engaged in ESD look like?
3. To engage service designers with the ESD concept as a service at an organisational level.	3. How can ESD at an organisational level be presented for the purposes of Service Design engagement?
4. To define opportunities for Service Design to enable ESD.	4. How can Service Design be used to enable ESD?

3.4 Research strategy

Research purpose and research questions inform research strategy (Robson, 2002). Strategy is a road map “an overall plan for undertaking a systematic exploration” (Marshall and Rossman, 1995: 40). Strategy informs the overall approach to research and includes decisions about research methods and discussion on the trustworthiness of research.

As previously mentioned, the exploratory nature of this research suggests that the research is flexible. In addition, the use of “what is going on here?” and “how” questions further suggest a flexible design approach to the research (Robson, 2002). Unlike fixed research design that seeks to test theories, flexible research usually aims to develop and build an understanding of complexities of real life (ibid.) It is in this context that this research seeks to construct opportunities for the field of Service Design in the context of ESD.

Robson (2002) notes that a particular strategy does not have a strong link between the research methods and research strategy (i.e. fixed research means use of quantitative methods, flexible research means use of qualitative methods). However, most authors agree that flexible, exploratory research tends to use qualitative methods of inquiry (Robson, 2002, Marshall and Rossman, 1995, Creswell, 2014). Qualitative evidence tells the story from the participant’s viewpoint and provides rich descriptive detail, whereas quantitative evidence is generalized, statistical estimations derived from large amounts of data (Trochim, 2005). For the purposes of this research, qualitative methods were used to gather/analyse data. The research methods used will not only reflect the research strategy but be appropriate for the research questions that are being answered.

Table 3-3: Research Questions and Data Collection Methods

Research Questions	Stages of inquiry
1. What is the relationship between Service Design and ESD?	Stage 1: Literature review
2. What do schools engaged in ESD look like?	Stage 2: Case studies
3. How can ESD at an organisational level be presented for the purposes of Service Design engagement?	Stage 3: Translation/Model development
4. How can Service Design be used to enable ESD?	Stage 4: Pilot Study and In-depth interviews

Question 2 lends itself to case studies (including in-depth interviews, open-ended questionnaires, document analysis) while Question 4 lends itself to in-depth interviews and round-table discussion. Further justification and description for the use of a particular method of inquiry and analysis for each stage of the research

process will be provided in the next sections of this chapter. The trustworthiness of each method is discussed in each stage with a summary at the end of the chapter.

3.5 Research data collection

The following section introduces three stages of data collection undertaken during the research study. Stage 1 focused on the literature review, Stage 2 focused on collecting data for ESD case studies and Stage 4 focused on conducting in-depth interviews with service design practitioners.

3.5.1 Stage 1 – Literature review

The aim of the Stage 1 was to carry out a literature review that would allow for a discussion of two topics, Service Design and ESD. In this review, the research sought to explore the first objective and question in the research:

1. To critically review literature around the concepts of ESD, the current state of change processes towards ESD in the English primary educational system and their relationship to three planned change strategies of human systems, transformational change and Service Design approach.	1. What is the relationship between Service Design and ESD?
---	---

The literature reviewed included a selection of available published and unpublished documents in relation to the two topics. One of the first gaps identified through the review of literature was the lack of Service Design literature on the topic of education and ESD in particular. This led to the researcher reviewing the two areas separately and seeking a possible theoretical connection between them. The review of the literature provided initial support to an assumption that the researcher expressed at the initial stages of the project: Service Design could potentially enable ESD as ESD presupposes change in education which is a service. However, the link derived from the literature between Service Design and ESD was an **additional link**, based on the **change theories** (Chapter 2). To further explore whether Service Design has the potential to engage in this context, an understanding of ESD at an organisational level was perceived to be important. This need opened up an

additional line of inquiry. In particular, it became important to understand a vision of ESD in practice. Although there was an abundance of literature on the ‘vision’ of ESD, there were only a small amount of studies that explored such vision in practice, including in England. This gap in knowledge was sought to be filled through Question2.

3.5.2 Stage 2 – Case studies

The aim of the Stage 2, informed by the literature review, was to answer Objective and Question 2.

2. To develop understanding of ESD as change at an organisational level.	2. What do schools engaged in ESD look like?
--	--

The exploratory nature of the objective and the question allows for several methods of inquiry: survey, experiments, or case studies (Yin, 1994). However, the importance of understanding change in the real life context of educational institutions, and the focus on investigation of a contemporary phenomenon of sustainable development, meant that a case study is the most appropriate method of inquiry. It must be noted that a case study has been defined both as a method of inquiry (Schwandt, 2001) as well as a strategy (Yin, 1994). Schwandt (2001) argues that as a method, case(s) may be “chosen and studied because they are furthering understanding of a particular concept” (p.23) and therefore are instrumental in the research. It is in this context, that case studies (Stage 2) were carried out.

3.5.2.1 Unit of analysis

A case or a unit of analysis are defined to be specific instances of a phenomenon which has been selected for a study (Schwandt, 2001). School, as an organisational entity, has been selected as the unit of analysis for the purposes of this research. Amongst various types of case studies, a study of organisation(s) undergoing a change process may be carried out (Robson, 2002). In this research, an interest lies

with a particular type of change that is being carried out by a school, a change towards ESD.

3.5.2.2 Multiple case studies

Case studies may be single or multiple case designs (Yin, 1994). Single case design may be used when existing theory is being tested or a critical case is clear but unfortunately the only example. (Yin, 1994 and Robson, 2002). The current research does not satisfy the rationale for a single case study design. The aim of the research is to understand what ESD looks like in a school at an organisational level, and calls for a generalised response. Yet, the review of literature suggests that schools have a unique approach to ESD. A multiple case study approach, with its focus on **analytical rather than statistical generalisation**, therefore is suitable for a method that needs to be **sensitive** to the unique approaches of the schools, while developing an understanding that is **generalised**.

3.5.2.3 Sampling strategy for case studies

The case study strategy for selecting units of analysis follows **purposive** rather than **statistical logic** (Schwandt, 2001). The logic for purposive sampling relies on choosing representative units of analysis that will be relevant in answering the research question. Based on the multiple case study strategies and Question 2, that this part of the research seeks to answer, schools that are moving towards ESD were searched.

Search strategies for participating schools involved the researcher's personal connections and contacting schools in the Nottinghamshire and Leicestershire areas from the local council list available online of schools involved in EcoSchool program. The EcoSchools program is an accreditation program for schools interested in engaging with eco-related activities and the limitations of the program are discussed in Chapter 2. However, engaging schools on the list was based on the rationale that schools involved in the EcoSchools program, at any level of

accreditation, were already aware of such concepts as sustainability and were more likely to get involved with the research.

From the first attempt at recruiting, it became evident that there are both theoretical and practical barriers to the search strategy. Theoretically, the aim of the research was to investigate ESD at a practical level. It was therefore important to be open to what that means, while at the same time providing boundaries for what it might be. Secondly, schools **interested** in ESD rather than **involved** in ESD were expressing interest in the research. The original aim of the research to engage schools that were enabling ESD at the deepest level of engagement was changed to invite schools engaged in ESD and schools interested in ESD to participate. This change is reflected in a call for participation (APPENDIX A). Although the new approach did not affect the research question, it changed the focus of the research from developing generalisation based on **exemplary cases** only (Bryman, 2004) to including **negative cases** and therefore strengthening the validity of the research.

Yin (1994) notes that multiple-case designs require extensive resources and time and therefore should not be taken lightly. This meant that the number of case studies had to be large enough to establish analytical generalisation, yet be manageable for the researcher. Overall, almost 100 schools were approached by post, email and in person. Most schools did not respond to the call, with several schools sending a rejection letter and 5 schools agreeing to participate in the research. Five participating schools with a variety of knowledge and involvement with ESD concepts were recruited for the purpose of this research.

3.5.2.4 Case studies: Data collection

Case studies rely on many sources of data collection: questionnaires, interviews, some form of observation and historical and document analysis (Marshall and Rossman, 1999). No one source has an advantage over another and a good case study will use as many sources as possible (Yin, 1994) to add to the breadth and

depth of an investigation, which is known as **triangulation** (Denzin and Lincoln, 1998). During the research study, three types of methods were used (Table 3.4)

Table 3-4: Data Collection Methods in Case Studies

Data collection methods	
In-depth, contextual interviews	1. Initial interviews with head teachers 2. Follow-up interviews with staff
Questionnaires	1. Questionnaires to the staff in each school
Looking for other evidence	1. Collecting documents during visits to schools and available materials online

3.5.2.5 In-depth interviews

Initial contextual in-depth interviews were carried out with all head teachers. The aim of the initial interviews was to gain an holistic overview of the school’s organisational approach to ESD. The **advantage** of interviews as a method to provide such in-depth, detailed and holistic information meant that they were the chosen method for first stage of data collection. At the same time, interviews have a disadvantage, in that they are time consuming (Gray, 2004), which led to a premeditated selection of interviewees.

A head teacher’s role is both strategic and operational; they may be described as the bridge between the school community and the rest of the stakeholders and they lead the development of vision for the school. Head teachers therefore are perceived to be at the centre of the school’s activities, and for the purpose of this research were selected as the key persons for the initial stage of the information gathering.

Interviews involve a researcher asking people questions and receiving answers. The data gained from the interviews is sought to provide a sense of reality (Burns, 2000) and it may be concerned with knowledge about people and organisations (Robson, 2002). Interviews may be structured, semi-structured, and unstructured, which to an extent is based on how ‘in depth’ of a response is sought.

Table 3-5: Types of Interviews (Robson, 2002)

Fully-structured	<ol style="list-style-type: none">1. Pre-determined questions with fixed wording, in pre-set order2. Use of open-response questions
Semi-structured	<ol style="list-style-type: none">1. Pre-determined questions, order can be modified by an interviewer2. Questions may be changed, explanations given, inappropriate questions omitted, others included
Unstructured	<ol style="list-style-type: none">1. General area of interest and concern, conversation develops2. Completely informal, in the form of conversation between informant and researcher3. May include informal interview, chatting with someone in a research setting, such as after a period of observation

For the purposes of this research, the aim was to gain an in-depth understanding of a school’s holistic approach to ESD and it was this aim that also defined the boundary within which the interviews were set. Semi-structured interviews therefore were chosen as an approach to conducting interviews with the head teachers. During the interviews, the questions were led by the **preparation stage** (Burns, 2000), a conducted literature review by the researcher in relation to both ESD and change theories. Although a set of questionnaires were developed (APPENDIX B) these were only used as a guide, with most conversation developing during the interviews. The interviews also took a slightly different direction based on the school that was being interviewed. Head teachers whose schools were working towards sustainable development conversed about what ESD means for the school **now**. Head teachers whose schools were interested in ESD but were not yet engaged spoke of what ESD could mean for the school in **the future**. Both tactics led to understanding ESD at organisational levels.

Interviews conducted were face-to-face with head teachers on the premises of individual schools. These contextual inquiries allowed for **rich data** collection. But also, as the interviews had some structure, this guided the researcher and helped her to avoid **bias in the process**. Interviews with head teachers were audio recorded, with each interview lasting around one hour. The recordings were then **transcribed** and sent back to the interviewees, further increasing the reliability and validity of the content (See APPENDIX C).

Piloting is an important practice in research and can be used to trial a research study or method to ensure its appropriateness and provide further insight into the development of the study. For the purposes of this research, methods rather than a whole study were piloted. An interview process with the first head teacher was piloted and informed other interviews with head teachers and follow-up interviews with teaching assistants. In particular, the researcher became more attuned to the school environment, as well as the topic, making future interview processes a more reflective practice.

3.5.2.6 Questionnaires

Interviews with individual head teachers provided an overview of schools' approach to ESD and touched upon elements of organisational operations, strategies, vision, projects, and leadership. Organisational visions and strategies are carried out by individual employees who constitute the organisational culture. The aim of the next data collection stage therefore was to engage with all school staff to further understand organisational practices and culture. In order to generalise findings to the organisational level it was important to engage with as many respondents in each school and at all levels of the school staff.

Questionnaires is another method of qualitative data collection through which people are asked to respond to capture their values, perceptions, and interests (Gray, 2004). Unlike interviews, one of the main advantages of the questionnaire is the ability to administer them quicker and with a wider scope (Bryman, 2004). For this part of the research, a questionnaire was chosen as a method to collect data from staff members in each school.

Table 3-6: Advantages and Disadvantages of Self-Administered Questionnaires (Bryman, 2004)

Advantages of questionnaires	Disadvantages of questionnaires
Cheaper to administer	Cannot prompt/probe
Quicker to administer	Cannot ask many questions that are not salient to respondents

Absence of possible interviewer's bias	Questionnaire can be read as a whole
No interviewer variability as interviewer is not present	Lower response rate
Questionnaire that guarantees confidentiality may elicit more truthful responses	Greater risk of missing data
Convenience to respondents	Difficult to ask a lot of questions
Reliability of the collected data	

3.5.2.6.1 Questionnaire design

The aim of the questionnaires was to understand the organisational practice and culture of each school. The need for personal and rich data from the staff led to the design of a **word-based** questionnaire (Cohen et.al, 2013). A large sample size requires a structured questionnaire. In this study the sample size of staff in each school was relatively small (between 6 and 30 members) and allowed for a less structured approach. The exploratory purpose of the research and the need for personal data necessitated open questions. At the same time, the questions had a set agenda, and resulted from the analysis of the interviews with head teachers. The chosen format therefore was a semi-structured questionnaire, which set the agenda but did not presuppose the nature of the response (ibid.). Questions were constructed to follow the funnel model, starting with **generalised questions and ending with more specific ones** (Cohen et.al, 2007) and consisted of both closed and follow up open questions. The questionnaire was piloted with two teachers who were not part of the sampling cases. As a result, adjustment to the questionnaire terminology was carried out. The design of the questionnaire (APPENDIX D) also included following ethical considerations (ibid.):

Informed consent form;

Rights of participants to withdraw at any stage of completion;

The potential of the research to improve their situation;

Guarantee of confidentiality, anonymity, and non-traceability.

3.5.2.6.2 Questionnaire distribution

Questionnaires were distributed by two means: Bristol online survey (BOS) and paper based. An online survey was set for each individual school and a link sent out

to the head teachers who helped to redistribute the link to the staff. An online questionnaire usually has a higher rate of response than other means of engagement such as face-to-face or phone interviews (Bryman, 2004). Online questionnaires also allow the researcher to control the amount of questions that the respondent sees at a time, encouraging them to finish the whole of the questionnaire.

No monetary incentive was proposed to the participants. However, to increase the response rate, the online survey link was sent out to the head teacher, rather than directly to the staff. Head teachers were reminded a number of times via email to encourage their staff to complete the questionnaires. One of the schools expressed a preference for the postal questionnaire, which was printed, taken and then picked up from the school. Taking questionnaires in person was another tactic to encourage staff to reply. One of the disadvantages of the open-ended questionnaires is a lack of thoroughness (Blair, et al. 2014). However, this was only experienced in one of the schools, where printed questionnaires were distributed by hand. Yet, the percentage of the respondents was high ranging from 8-12 members of staff which constitute 30%-50 % of the school (based on the size of the school), which allowed for some cross referencing of the responses.

Another possible disadvantage of the questionnaire is the unrepresentativeness of the sample. As the responses were situated in the school, this issue was also eliminated.

3.5.2.7 Follow-up interviews

An additional set of follow-up, semi-structured contextual interviews were carried out with individual staff in two out of five cases. The interviews were set up on the initiative of individual schools rather than the researcher. The willingness to further engage with the topic from two cases coincided with and supported their interest in ESD. Further, the informants were open to lead discussion and put the researcher at ease to ask and engage in conversation about complex organisational processes and

personal values, attitudes, and motivations (Bryman, 2004). Questions were developed to seek both support for data already analysed from the interviews with the head teachers and the questionnaires and to delve deeper into the organisational processes and culture. In both cases, interviewees were higher-level teaching assistants whose responsibility was to embed ESD in practice at the school. Their view of ESD in the school was at the practical level, where vision provided by the head teachers was put into practice. Further, they were in closer contact with other staff and teachers, enabling a greater insight into the school culture. Interviews were carried out at the school. The school environment was used to develop **probe** questions to further extend, elaborate and provide detail about the topic (Cohen et al., 2007). Each interview was over an hour and was audio recorded, transcribed and sent back for validation to the interviewee.

3.5.2.8 Collection of unobtrusive measures

While methods such as interviews and questionnaires are interactive research methods, unobtrusive measures involve the use of non-reactive sources which are independent of the presence of the researcher and may include documentary evidence or archives (Gray, 2004). Documents are the most frequently used unobtrusive measure, and include a wide variety of organisational and institutional documents. For the purposes of this research documents were used as **supplementary evidence** (Daymon and Holloway, 2002) and triangulated with other methods (ibid.).

Schools are busy environments, with limited availability for personal contact with the research. Therefore the aim of collecting documents was to further verify and enrich understanding of each case. Documents both online and offline were collected for each case and included: individual school websites, Ofsted reports, newsletters, online news articles, project records, planning permissions, evaluation documents, awards submissions, etc. There was some consistency in the documentation collected (e.g. all schools had websites and Ofsted reports) as well

as some variation. Overall this variety of documentation enabled the researcher to develop a more holistic cross relational exploration of ESD for individual schools.

For each case, a selection of documents that spanned over time was available. For example, 2 to 3 Ofsted reports were available for each school. These **episodic records** (Daymon and Holloway, 2002) allowed the researcher to track the development process of each school as perceived by an independent assessor. Websites, newsletters and news articles developed and highlighted the schools' identity that it sought to portray externally and therefore highlighted what was important to individual schools. In addition, award submissions and planning permissions highlighted upcoming projects and developmental processes that were not mentioned during other data collection stages. This partial documentation of the school's processes and facts were produced either by the school itself or an official, making these documents both **authentic** and **credible** for the purposes of the research (Sapsford and Jupp, 2006).

The case studies provided a basis for Stage 2, the development of a Sustainable Education Service Model (SES) Model, to be used in the Stage 3 of the research.

3.5.3 Stage 4a – Pilot study with service designers

The aim of this Stage 4 was to attend to Objective 4 and answer Question 4.

4. To define opportunities for Service Design to enable ESD.	4. What are the opportunities for Service Design to enable ESD?
--	---

A pilot study was carried out at the beginning of the research project with designers at a Service Design Network Conference, Berlin, 2010. An aim of the study was to see whether there is an interest, and a potential, for service designers to engage with the topic.

During the conference, the researcher proposed a round table discussion workshop titled, *Design as an Approach to Education For Sustainable Development*. Over 100

attendees at the conference were invited to take part. Most attendees were either professional or academic service designers, meaning that the pilot study used **representative sampling**. Five professional service designers joined the discussion.

At the workshop, the researcher presented an initial analysis and findings from the interviews with head teachers. Participants were then invited to discuss the question: *How design and design thinking can help UK primary schools to address issues of Sustainable Development (SD)?* The round table discussion continued for an hour and was audio recorded.

3.5.4 Stage 4b – In-depth interviews with service designers

This research stage was constructed to explore propositions about the relationship between Service Design and ESD established in the literature review and to explore other opportunities for Service Design in this context. To investigate this phenomenon, in-depth, semi-structured interviews were conducted with seven professional service designers. The interview questions were open but guided by several issues that were raised throughout the research.

In particular, from the literature review ESD was defined as a new context for Service Design. Therefore, ESD had to be presented in a clear and engaging format for the interviewees. The model developed in Stages 2 and 3 aimed to provide such a format. It was used as a reference point from which to initiate the interviews and allowed the researcher to elicit information from service designers that was grounded in real world problems and objectives rather than relying on the interviewee's own understanding of ESD. In addition, the potential of the model to be used as a tool by service designers was also evaluated during the interviews. As a result, this provided structure for each individual interview, increasing **the reliability** of its outcome.

When proposing the model and hypothesis to service designers, the researcher was aware of the potential imposing personal bias and therefore the threat to validity (Akbayrak, 2000). However, prior to the interview the document with the model

and a short description of the proposition was sent to the interviewees (APPENDIX E). The aim of the document was to objectively present information and for the interviewees to form their opinions independently prior to the interview.

3.5.4.1 Stage 4b Sampling

In-depth interviews are used to discover the shared understandings of a particular group (DiCicco-Bloom and Crabtree, 2006) and purposive sampling was important for this stage. To explore Service Design as a field in relation to ESD, it was important to engage both academics and practitioners. Service design is a young profession and academic field with a limited number of potential participants. The researcher drew on her personal experience to find and approach service designers both in academia and industry. As a result, a sampling size of seven service designers, in the UK and USA, were recruited. All interviews were carried out face-to-face both in a physical environment as well as through Skype and lasted for approximately an hour. Most interviews were audio recorded, except for two interviews due to technical issues. Instead, notes were taken during these interviews and **memos** written up once each interview was finished. As with questionnaires and other interviews, steps to ensure ethical procedure were followed.

3.6 Research data analysis

Data analysis consists of examining, categorising, tabulating, testing and otherwise recombining data to address the research questions and research aim (Yin, 2003). The process of qualitative data analysis as defined by Miles and Huberman (1994) is an iterative process (see Figure 3-1) consisting of three parts data reduction, data display and conclusions drawing/verification. Each stage of analysis in this research has followed this iterative process.

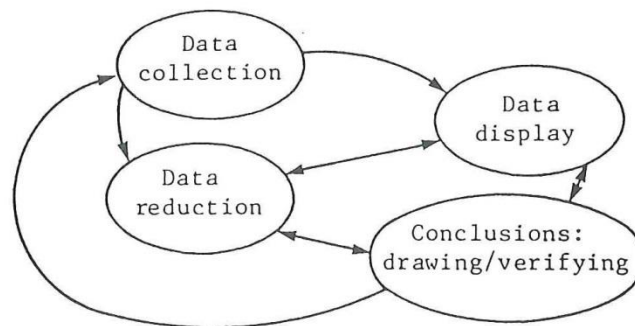


Figure 3-1: Components of Data Analysis: Interactive Model (Miles and Huberman, 1994)

Data reduction began with the development of research questions, selecting and defining participants, and defining the research approach. To find this information refer to Chapters 1, 2 and the beginning of Chapter 3. Other methods for data reduction as defined in Table 3-7 have been selectively used in each stage. **Data displaying** is a process of organising, compressing, and assembling information in order to draw conclusions and action. As the data in this research was various and rich, but primarily textual, using data displays to compact and make sense of data was important. Throughout each stage, several methods from Table 3-7 were applied. **Conclusion drawing and verification** is an analytical process that began at the beginning of the data collection process and continued throughout research in an iterative manner. Vague conclusions were drawn at the beginning of data collection and through the process of verification and further data collection, developed into a more confirmed and validated concepts.

Table 3-7 Data Analysis Components Definitions, Based on Miles and Huberman, 1994

Data Reduction methods	Process: Of selecting, focusing, simplifying, abstracting and transforming the large amount of data into a manageable format; Methods: Writing summaries, coding, teasing out themes, making clusters, making partitions, writing memos.
Data Display methods	Process: Is a process of organising, compressing, and assembling information in order to draw conclusions and action; Methods: Extended texts, matrices, graphs, charts, and networks.
Conclusion Drawing/Verification methods	Process: Iterative confirmation and validation of the data meaning; Methods: Noting regularities, patterns, explanations, possible configurations, causal flows, and propositions.

This research therefore follows **inductive analysis** where concepts, themes and models emerge from the data, unlike **deductive analysis** where the focus is on testing hypothesis and concepts (Thomas, 2006). For methodology, inductive approach means not imposed and pre-determined, but flexible and data driven methodology (ibid.). Table 3-8 summarises the purposes for the inductive analysis that can be found in this research.

Table 3-8: Purposes for Inductive Analysis (Scriven, 1991:56 in Thomas, 2006: 238)

To condense extensive and varied raw data into a brief, summary format;
To establish clear links between the research objectives and the summary findings derived from raw data and to ensure that these links are both transparent (able to be demonstrated to others) and defensible (justifiable given the objectives of the research);
To develop concepts, a model or theory about the underlying structure of experiences or processes that are evident in the text data

3.6.1 Stage 2 –Case studies analysis

Robson notes that a case study in itself does not call for a particular approach (Robson, 2002). Therefore, following the above mentioned strategy of analysis, the next sections describe and justify the use of analysis methods in this stage. One of the tools that has been used throughout the case study analysis has been NVivo software. NVivo was considered at this stage of analysis as it was seen as an

effective organisational and storage system (Robson, 2002). However, other features, including its coding and retrieving capabilities were found useful throughout the analysis process (ibid.).

3.6.1.1 Interviews with head teachers

Audio-recorded, semi-structured interviews with five head teachers were imported one by one into the NVivo software (see Figure 3-2). The analysis process began with the first imported interview in order to avoid accumulation of data (Robson, 2002). The audio recording was transcribed and initial ideas about the data were recorded as memos (Goulding, 2002).

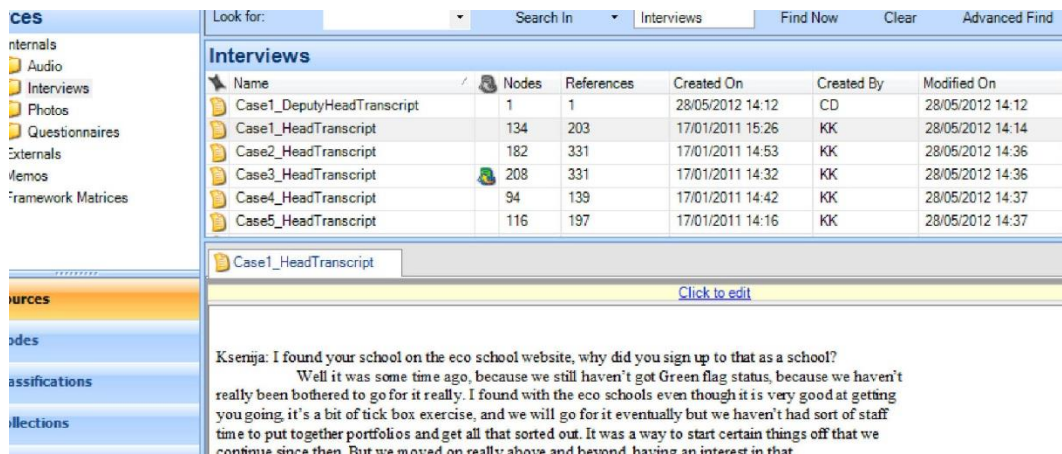


Figure 3-2: Transcribed Interviews in NVivo

Line-by-line analysis was performed to start searching for possible phrases, concepts, and meanings. The process was repeated with all five interviews, which led to the development of around 200 open codes. Axial coding was also performed iteratively, which allowed for higher level abstraction (Goulding, 2002). This led to 11 core categories identified. At the end of coding interviews, axial/open codes were collected and each code was analysed for meaning and given description (see Figure 3-3). A full collection of codes can be seen in APPENDIX F.

SchoolAim_HavingimpactonCommunity	Aim to outreach and to impact the community
SchoolAim_InfluenceChildren	An aim to create a positive impact on the children, their development and their future

SchoolAim_MakingImmediateSchoolSust	Aim is to look at the school, internally, to see how it can become more sustainable
SchoolAim_TacklingSDIssuesToMakeDifference	Aim is to work on projects and issues that make difference and are also beyond curriculum

Approach to ESD	From axial coding: the purposeful, goal oriented activities that agents perform in response to the phenomenon and intervening conditions
-----------------	--

Name	Description
Approach_CreatingGoals	A strategic way for school to create change, the more extreme goal the more radical is the behavior change
Approach_CreatingSuccession	Appointing individuals that share the values of the school
Approach_EmbeddingIdeas	An approach that makes an idea an integral part of the school
Approach_ExtendingCurrentPractice	Ability to think outside the box and be proactive, shifting perspective on what school normally does or what is considered the norm

Figure 3-3: Collection of Axial/Open Codes With Description

This process allowed for noting patterns, themes and trends **across all five cases**. It also developed a preliminary structure which was used to **display** the initial data and to guide future research.

It was important to draw a conclusion, not only across, but also within each case. To do so, a preliminary **interim summary** (Robson, 2002) for each head teacher was developed. For this, queries were run to retrieve data by individual interviewer whilst keeping the coded structure. To guide the analysis, Code Manager (Goulding, 2002) was used to note the frequency of quotations per code (see Figure 3-4). Information was then compared and contrasted within each code to develop the analysis for each interviewer. Analysed text was grouped with relevant sections under a common theme. Each large theme was rewritten as a question and set the

structure for the display. To see an example of a section of the **interim summary** for individual head teachers see APPENDIX G.

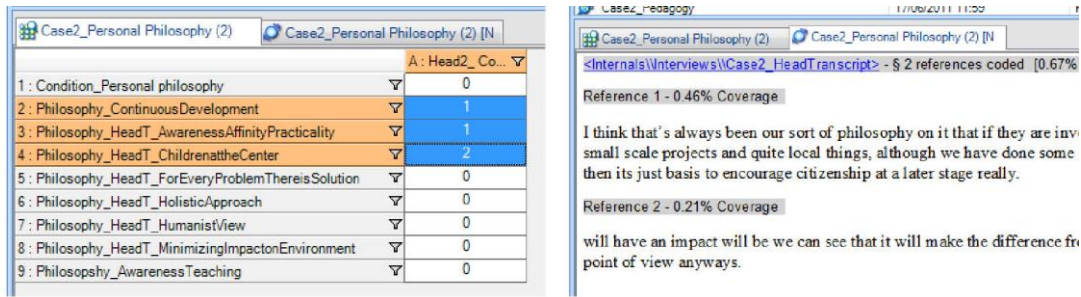


Figure 3-4: Code Manager Displaying Query Run For One Interviewer Per One Code

3.6.1.2 Questionnaires

Data from online and postal questionnaires was re-entered into a separate document and brought into NVivo for further analysis (see Figure 3-5). One of the aims of the analysis was to find support for existing categories developed through initial interviews and to further expand on them.

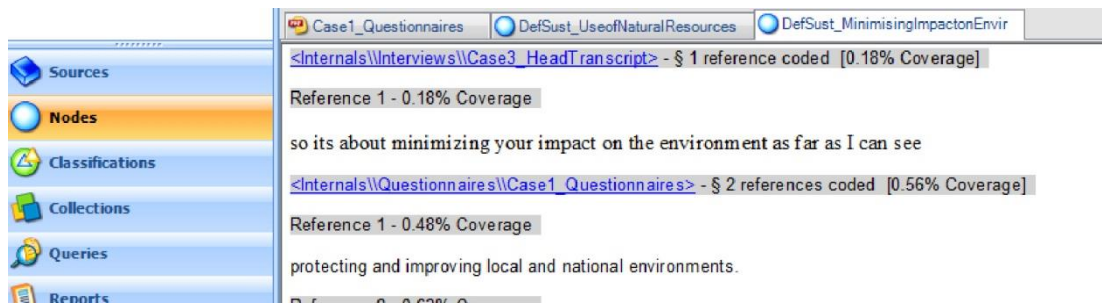


Figure 3-5: Further Developing Categories Through Questionnaire Analysis

This allowed the researcher to compare and **weight the evidence** between staff responses and the head teachers who were the first informants in the research. The process of analysis was, as with the interviews, based on open and axial coding of the information. Memos were developed to note themes and patterns both across the schools as well as within the schools (see Figure 3-6).

Name	Nodes	References
About ESD	0	0
Activity and defining sustainable school	2	2
Addressing quality of life	0	0
Barriers to ESD	1	1
Being exemplar	0	0
BeingCriticall	0	0

Figure 3-6: Memos

Once the coding was finished, to further build understanding of individual cases and to make sense of the data, the researcher used the same technique as with interviews and developed interim summaries for each questionnaire. To do so, queries were run in NVivo that explored each category against questionnaire responses. Text was grouped and presented as answers to the larger questions. This process was repeated five times for each individual questionnaire. An example of an interim summary section for an individual questionnaire may be found in APPENDIX H.

3.6.1.3 Follow up interviews and unobtrusive measures

Follow-up interviews with two staff members from two case studies were analysed using similar techniques used for head teacher interviews. Analysis was undertaken simultaneously as the analysis of staff questionnaires and partly informed above mentioned interim summary.

The aim of the analysis of the documents collected for each case was **to support and augment** evidence from other sources (Yin, 2003). Here, the focus was on organisational level rather than individual level. The documents were collected for each school, read through, annotated and memoed. In particular, memos focused on organisational categories, patterns and themes developed throughout the research. At this stage documents were not brought into NVivo, instead memos were written in .pdf documents in Adobe Professional software.

Analysis of both follow-up interviews and additional documents was widely used for the purposes of **triangulation** and development of 'within-case analysis'.

3.6.1.4 Within-case analysis

‘Within-case analysis’ in this research is developed to draw conclusions about the phenomenon of ESD in a bounded context of a school (Miles and Huberman, 1994). The aim of analysis is to explain what is happening in the case. To do so, evidence from all sources has been **converged for individual cases and transformed** into a formalised descriptive set of variables that has been written into within-case analysis narratives (see APPENDIX I). Several methods were used to achieve the process of convergence and transformation.

The tool that was used most throughout this stage was **conceptually clustered matrices** (Miles and Huberman, 1994). Concepts and themes derived empirically from the previous analysis of the data (interviews, questionnaires and documents) and from the literature (need to explore organisational and individual values/approaches to ESD) were used to develop these matrices. For example, Table 3-9 shows a matrix developed to explore definitions of sustainable development and education for sustainable development within the school as an organisation as well as within individuals. This display of information allowed for **comparative analysis** between several variables (organisational vs individual definitions, sustainable development vs ESD definitions).

Table 3-9: Conceptually Clustered Matrix Sustainable Development/ESD Definition Case 4

	Organisation	Individuals	Some agreement	No agreement
Sustainable development definition	Concern for the environment issues of global warming, natural resources, sustainable material, etc.	Concern for the environment issues of global warming, natural resources, sustainable material, etc.	X	
	Minimising impact through change in behaviour individual and organisational.	Minimising impact through change in behaviour individual and organisational.	X	

	Utilise natural resources			x
ESD definition (hypothetical)	ESD is a way to create impact on the children.	ESD is a way to create impact on the children.	X	
		Teach sustainability to children.		x
		Change children's behaviour		x
	Model sustainable lifestyle in the school.	Model sustainable lifestyle in the school.	x	

Another example of a conceptual matrix that was based on a particular variable, i.e. Projects. A matrix was developed to show a series of projects that a school was engaged in against properties of the projects that emerged from the analysis of data.

Table 3-10: Conceptually Clustered Matrix by Projects

Project Name	Endangered Species	Community and Renewable Energy Project	Wind Turbine Project
Description	Aim: To create awareness in all children on endangered species	Aim: Students' discovery about local environment, energy use in local community and learning about renewable energy	Aim: To investigate the school itself and its own environment with regards to energy
Partner (s)	Local Zoo/Endangered Species Program	Rural Partnership (LRP); Parish Council, Local community	Business
Issue (s)	Endangered species	Community, environment, energy use	Energy use, school grounds
Embedded	Embedded into the curriculum	Embedded into the curriculum	Embedded into the curriculum
Participants	All pupils participate at least once	Pupils in that year	Older pupils

Leader/Supporter	Staff	LRP and council were idea source, financial expert, and resource (kits) support. Parents and local community - provided information about their energy use and daily practices; Teachers	Business
Time	Ongoing	One-off	One-off
Implications	The Zoo provides an ongoing support for the school and a source of ideas to be embedded into the curriculum.	Wider community implications where changes proposed by the students to increase well-being of local environment were shared and taken on board by the council. Project supported the learning process for all, promoting the issues, and keeping the profile of energy use in local community high. It also strengthened relations with the council by providing council with opportunity for securing more funding for such projects.	'Prototype projects' nevertheless have value as they allow schools to investigate their school, gain knowledge on subject, and to cross out impractical solutions.

Another approach to analysis was based as a result of additional document sources that were collected for each case. Data sources collected were twofold: produced and internal to the school itself, and produced by an external stakeholder such as Ofsted. The former evidence allowed the researcher to analyse for internal consistency of the evidence. The latter information was used to analyse perception of the school by others, which may be seen as rival **evidence, to compare and to look for consistency or disagreements between the two.**

Counting was used as one of the tactics that helped to see which themes/concepts were widely relevant to the case and which had more focused/specific application. This led to further comparative analysis within each case.

The report for each case was written up and illustrated, and presents the convergence of all findings for each case. Each within-case analysis seeks to build a logical understanding of the various concepts, themes, and patterns that were found in the data and to situate it within the boundaries of the specific school. The findings are formulated under overarching concepts developed across all cases

throughout the research.

Within-case analysis sections were developed as a means to develop a rich understanding of ESD and as part of an ongoing sense-making process. However, each report is a long document and due to the limitation of thesis space is only presented in the Appendices rather than in the main body of text. For an example of a within case report please see Appendix I.

3.6.1.5 Cross-case analysis

One of the aims of cross-case analysis is to increase generalisability of the research (Miles and Huberman, 1994). This relates to research Objective 2, to develop an understanding of ESD as change at an organisational level across schools rather than within one single case. In the process of cross-case analysis, a richer understanding and explanation of conditions under which identified phenomenon happens is sought. This research focuses on a **case-oriented** rather than a variable-oriented (ibid.) approach to cross-case analysis. In particular, each case has been understood **holistically**, before cases were compared to each other. In this process, an analytical approach of **synthesising interpretation** across cases was used, developing a general interpretation that is grounded in the findings of individual case studies (Miles and Huberman, 1994). In order to develop quality cross-case analysis, a tactic of **looking for alternative evidence** (Robson, 2002) has been used. In particular, sampling of cases for this research was based on their involvement with ESD, with few cases expressing limited involvement with ESD and one case expressing their interest but **not involvement** with the phenomenon.

To accomplish cross-case analysis several relevant methods were used. One of the methods used widely in this stage has been **stacking comparable cases**. The comparisons were guided by the common themes and concepts that were derived from the within case analysis. Partial displays were developed where a concept or several concepts are displayed for all cases. Table 3-11 shows an example of a matrix displaying Motivation for all 5 Cases.

A variation on the stacking comparable cases approach was used with projects matrices developed for each case. Due to the size of each matrix (see APPNEDIX N), matrices were printed out and physically stacked and compared/contrasted to further explore ESD at organisational level for the Project category and sub-categories.

Table 3-11 Analysis of Sustainable Development Definition Across All Cases

	Sustainable Development definition				
	Case1	Case 2	Case 3	Case 4	Case 5
Organisational and individual	There is relationship between human and nature; now and future.	There is relationship between now and future.	Opposite of unsustainable	Concern for the environment issues of global warming, natural resources, sustainable material, etc.	Difficult to define as very complex.
	Moving away from current patterns of behaviour in economy, society, environment.	Moving away from current patterns of unsustainable behaviour in environment: use of natural resources, global energy, creation of carbon footprint.	Moving away from current patterns of behaviour in economy, society, environment.	Minimising impact through change in behaviour individual and organisational .	Current lifestyle has a negative impact on depletion of resources.
	Need to establish relationship where man and nature co-exist.		Need to establish relationship of care between man and man, man and environment.		Concern for environment, natural resources, such as water and energy.

Agreement	x	X	x		X
Some Agreement				x	

Conceptual clustering was also used to synthesise a more general understanding of the concepts that occur across all schools but are **not case** specific. Table 3-12 shows a matrix with several concepts that was used to develop understanding of where activities happen and what are their potential scope of impact.

Table 3-12: Activity, Student Activation and Impact Matrix

DETERMINE PURPOSE	MEANS OF ACTIVATION	IMPACT
Development of the whole child	All of the below	Increased interest and satisfaction in learning
To gain understanding of Sustainable Development issues and concepts.	Issue (broad or narrow) where in the school (one subject/cross curricular).	Awareness of the issue
	Complex issue/concepts (broad), relate to local context, students experience.	Awareness of the issue
Develop capacity to address issues/values/concepts through behaviours, practices and skills.	Individual, small behaviours (gardening, looking after the animals) through school projects, participating in operations.	Gaining skills/ gain benefit from the process (well-being)/experience value of care Participation in a school development (individual).
	Group behaviour/ school projects/operations (ex. investigate school behaviour/solution).	Empowering students to be eco-warriors/citizens, Participation in a school development (social), critical thinking.
Encourage students' voice	Scope (school-wide decision making to narrow decision) classroom/student clubs/other projects.	Empower students. Encourage relationship between students and the school.

Once data has been reduced to a manageable degree, a variation of a matrix display known as **meta-matrix** or a '**monster-dog**' (Miles and Huberman, 1994) was used to

display as much information across all cases as possible, to start noting overall approaches/patterns/general concepts across cases (APPENDIX J).

Although the data was iteratively reduced, displayed, and summarised through various methods, it was found that for the case-cross comparisons, sheer volume of textual information was still difficult to engage with. As a result, the researcher sought to develop graphical representations (see Figure 3-7), based on the idea of networks, where a network is a collection of nodes/points connected by lines (ibid.). Some graphical representations included graphs and text, whilst others focused only on the visual representation. These networks were created for a concept across all cases, and then stacked to develop cross-case analysis.

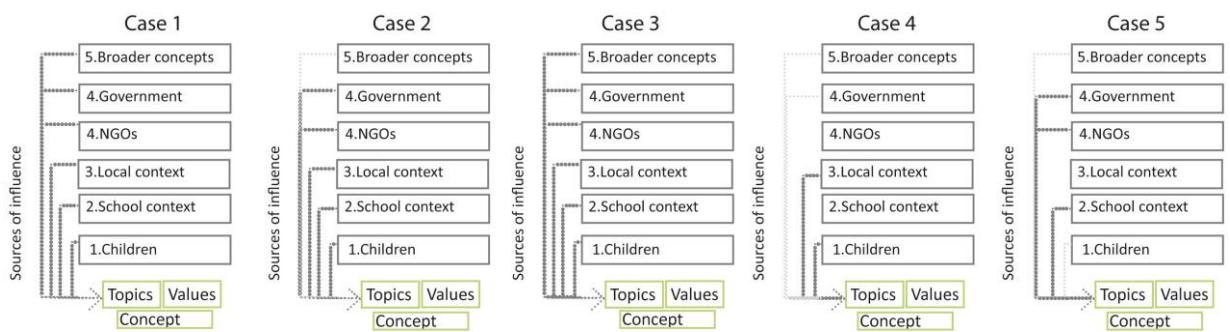


Figure 3-7: Example of a Network for Cross-Case Comparison, Showing ESD Information Sources

The analytical text synthesised from above mentioned methods has been written up and is presented in a cross-case analysis in Chapters 4 and 5. The text is displayed by major themes that have been iteratively developed from the start of the analytical process.

3.6.2 Stage 3 – Model development

During this stage, the information from the cross-case analysis was further developed for the purpose of Service Design. During this **translation stage**, service thinking and organisational change theories were applied to the narrative presented in Chapters 4 and 5. This process enabled further analysis of the information and resulted in a generalised visual display of a sustainable school model. Refer to Chapter 6 for the details.

3.6.3 Stage 4a – Pilot analysis

The audio recording from the round table discussion with Service Design participants (see Section 3.5.3) was loosely transcribed. The transcription was analysed by clustering common themes and ideas. The interim summary was written and submitted to be published in Touchpoint magazine (APPENDIX K). The findings from the pilot study analysis verified the initial hypothesis expressed at the beginning of this research. This provided the researcher with the confidence to further proceed with her work.

3.6.4 Stage 4b – Analysis of the Interviews with service designers

The analysis of in-depth interviews with service designers focused on answering Objective and Question 4 of the research study.

4. To define opportunities for service design to enable ESD.	4. How can Service Design be used to enable ESD?
--	--

As with previous interviews, analysis followed axial/open coding, additional comments were written up during the process (see Figure 3-8). Memos were written up during and after interviews and used to develop and expand themes from the data. The development of the themes/concepts was also guided by service designers' sense-making process of ESD by exploring the SES Model, developed during Stage 3. The findings from the analysis of these interviews may be found in Chapter 6.

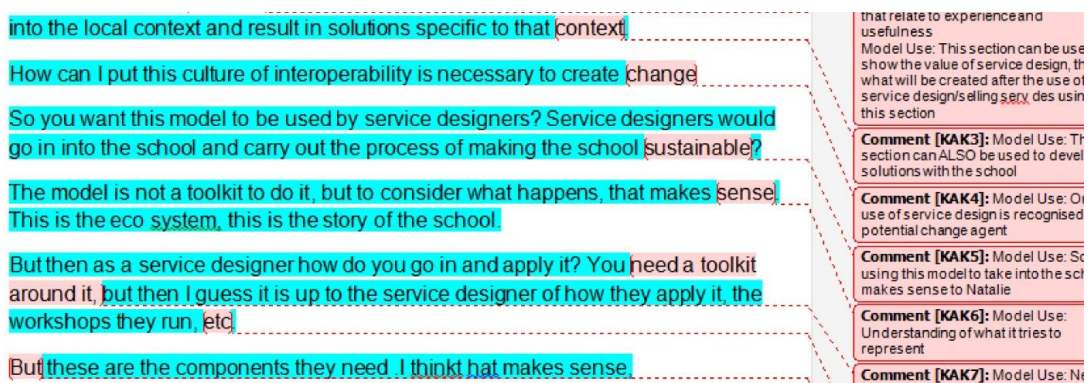


Figure 3-8: Coding of Interviews With Service Designers

3.7 Establishing trustworthiness

Establishing trustworthiness means to convince the audience of the research that findings of the research are believable by showing its validity, reliability and generalizability (Robson, 2002).

Table 3-13: Defining Validity, Reliability and Generalizability (Robson, 2002:93)

Validity	Validity is concerned with whether the findings are really about what they appear to be about.
Reliability	Concerns reliability of the methods used.
Generalisability	Generalisability refers to the extent to which the findings of the enquiry are more generally applicable outside the specifics of the situation studied.

In fixed research, usually deriving from quantitative research methods, strict procedures are established to assure validity and generalisability of the research; however, such procedures are unavailable in flexible research design (Silverman, 2005) whilst being very important.

3.7.1 Validity

Robson (2002) suggests using Maxwell's approach by focusing on threats to validity in the flexible research and showing how such threats have been minimised.

Threats to validity include **description**, **interpretation**, and **theory**.

Threat to description means an incompleteness or inaccurate data. Throughout the research, the audio recorder and Skype recorder were used to capture data. In the case of two interviews with service designers, when the audio machine was unavailable the researcher has written up detailed notes right after the interview. Open-ended questionnaires were written up and all the original copies have been saved.

Threat to interpretation means that the researcher has imposed their own framework on what is happening. The validity of interpretation in this research has been shown by providing **transparent** and **thorough justification** to the decisions taken throughout the research. This is particularly important in the translation period of the findings from the case studies to the development of the ESD as a service model. This researcher-led part of the project has been thoroughly documented and presented in Chapter 6.

Threat to theory occurs when no alternative explanation is provided throughout the research. Examples of establishing validity in this research are the literature review, when various approaches to ESD have been considered and the inclusion of a range of case studies in relation to ESD. In addition, in-depth interviews with service designers further considered a variety of opportunities for engaging with ESD outside of the proposed means by the researcher.

Data triangulation was used within case studies to reduce researcher bias, respondent bias, and reactivity. Further, to reduce researcher bias about opportunities for Service Design in ESD, instances to counteract propositions expressed at the beginning of the research were searched for. This was done through the pilot study round table discussion, in-depth interviews with designers and other literature.

3.7.2 Reliability

Reliability refers to the dependability of the study's conclusions (Gray, 2009). In qualitative studies this concerns the reliability of the methods and research practices (Robson, 2002). Robson suggests that this can be accomplished if the researcher shows that the research process has been accomplished thoroughly, with care and honesty (ibid.). To do so, methods and research processes were thoroughly described in the above mentioned sections. In addition, audio recording, transcripts and responses from the questionnaires and memos were carefully

stored for retrieval if necessary. In addition to the final thesis, two final year reports were developed, that add to the transparency of the research process.

3.7.2.1 Ethical considerations

Reliable research needs to follow ethical considerations which relate to the standards and codes of conduct (Robson, 2002). Research presented in this thesis followed ethical standards as defined by Loughborough University's Ethical Clearance Checklist (APPENDIX L). It is recognised that investigators have a duty of care to participants. As per the checklist, all participants were informed of the objectives and aims of the research. Schools participating in case studies were informed via an attached document in the email (APPENDIX A), whereas service designers were provided with SES Model pack, also via email (APPENDIX E) prior to the interviews. Questionnaires that were sent out via the online system and print also informed staff of the objective of the particular study. In addition, participants were asked to sign a consent form (APPENDIX M) either in person or electronically.

3.7.3 Generalisability

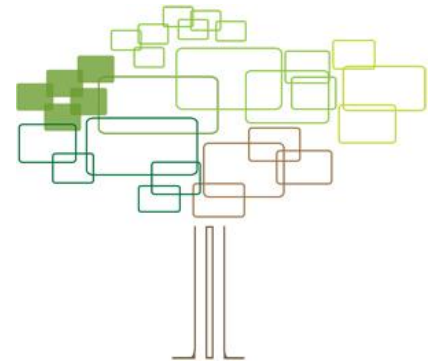
Flick (2014) suggests that generalisation in flexible design shall be concerned less with numerical and more with theoretical generalisation of the results. To increase theoretical generalisation, the number of individual situations is less important, instead variability of cases is necessary as well as triangulation of the methods. This approach is relevant to the case studies part of the research, where sampling included a variation of schools that were involved in sustainable education and triangulation of methods (interviews, questionnaires, documents) to collect data. A process of generalising is recorded in this thesis, where findings from individual case studies are gradually transferred to a more abstract outcome, Sustainable Education Service Model (SES Model).

Findings from the pilot study and interviews with service designers were translated to a general discussion of how service designers can be used to enable ESD. This generalisation was possible due to the purposive sampling of participants. Service

designers were sampled based on their industrial and academic profession in the area of Service Design. This profession presupposes a very particular set of expertise and knowledge. Therefore any individual from that community would satisfy the requirements for sampling. As a result sampling was based on availability of individual members of Service Design community rather than based on a specific characteristic of a participant. Findings were also compared with existing literature to add to the credibility of the discussion.

An **alternative process** to be used by service designers is also proposed in Chapter 7. This process was developed through analytical generalisation using literature review, research process and interviews with service designers.

4 Introduction to Cases



This chapter introduces five cases used in the study. It provides introduction to each case and draws initial comparison between them.

4.1 Introduction

The main study has been carried out following an exploratory multiple case study approach with five primary schools in England. The objective of this study was to develop an understanding of the change process towards ESD, particularly in institutions of primary education in England. It sought to explore processes with which schools engage and conditions under which schools move towards ESD, explore differences between schools' knowledge and awareness about ESD, motivations for engaging with an ESD agenda on on-going basis and barriers and general challenges that might be experienced towards such change.

4.2 School profiles

All five cases are mixed community primary schools maintained by the local authority in England. However, these cases present a variation in their approaches towards sustainability and education. For example, those schools that have identified themselves as leading or aiming to become leaders in sustainability and education, have been acknowledged by Ofsted and received multiple external awards, have been, for the purposes of this research, defined as sustainable (very sustainable or somewhat sustainable). The schools that do not fit this category, have been labelled as non-sustainable. Other variables that differentiate these schools are their contexts including the size of the school, students' achievements,

local area status, schools' provision of education and stability of the schools' leadership.

Variation in some of these variables may be seen as extreme, for example there are two cases where the schools are in disadvantaged areas but in one case, sustainability is very high on the agenda, whereas in another case it is very low (see Figure 4-1). This extreme variation highlights that the process of ESD is "transparently observable" (Eisenhardt, 1989) and that helps with better understanding of the change process towards ESD by schools.

4.2.1 Case 1

The context of Case 1 is challenging. The school serves "one of the most deprived estates" in its area (Online report, 1). It is larger than the average-sized primary school. The percentage of special educational needs students and pupils eligible for free meals is "well above national average" (Ofsted, 1 and 1a). The pupils entering the school have "exceptionally low standards in all areas of their learning" (Ofsted, 1) and throughout their years, pupils' attendance is poor which affects pupils' overall attainment.

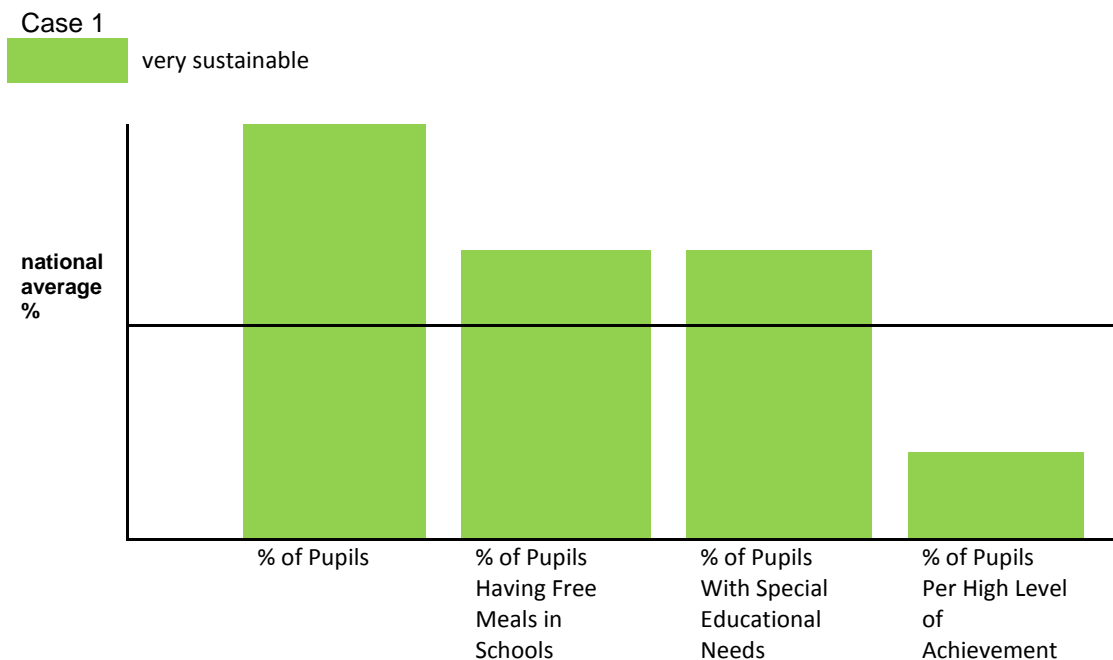


Figure 4-1: Case 1 Profile On A National Level

Despite this, the school has been deemed as 'good' by Ofsted for its teaching



Figure 4-2: An Eco Build of Case 1

(Ofsted 1 and 1a) and exceptional in its work towards sustainability. ESD is consistently acknowledged by Ofsted (Ofsted, 1 and 1a), the school itself (School Prospectus, 1) and other organizational bodies (Online report,

1). Awareness of sustainable development and education in the

school is high and is across the whole school: *"I really believe it [ESD] is shared throughout the whole school"* (TA Interview, 1). The school has also been recognized as *"one of the leading schools in the country"* to develop ESD (Ofsted, 1) and has been mentioned in several case study articles (Online article, 1). ESD has been on the school's agenda for around 10 years with strong leadership behind it. During the course of the research however the school has undergone a transition period with a new head teacher taking the role. The transition period is only reflected in the last data collected (follow-up interviews), which reflects the changes in the school and some uncertainty as to the future role of ESD. This case brings focus to an important variable of ESD leadership and exemplifies an extreme case of ESD as a phenomenon within a deprived area.

4.2.2 Case 2

Case 2 is a case that is also pursuing sustainability. Unlike Cases 1 and 3 this is a small school and is located in a more affluent area. The percentage of students eligible for free meals is low (see Figure 4-3), and the percentage of disabled pupils and those with special needs is also below national average (Ofsted, 2).

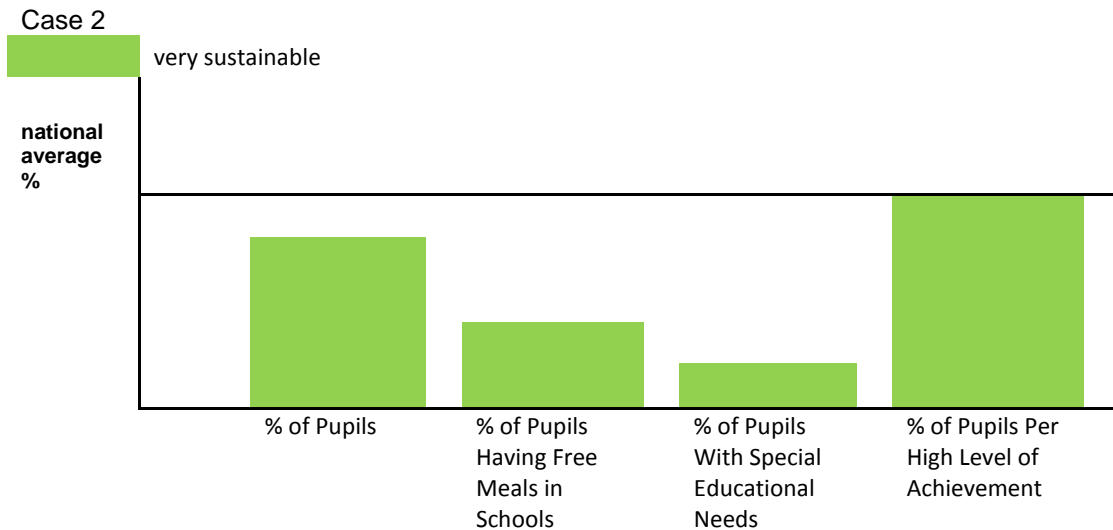


Figure 4-3: Case 2 Profile On A National Level



Figure 4-4: Case 2 Willow Classroom

Students enter the school at the standards normally seen at that age, and usually by the end achieve above national standards (Ofsted, 2). Ofsted deems this school to be ‘good’, with teaching being good to outstanding. The school is recognised for its achievement in EcoSchools by Ofsted, by the school itself and

by the international awards scheme, Eco-Schools.

The school has been an active Eco-School for the last 9 years and has achieved four Green Flags, the highest awards in Eco-Schools. While Cases 1 and 3 are recognised for their work in sustainability, this school is limited to being an Eco-School, focusing its work on an environment and localised approach. However, this school is the most advantageous out of the three schools, in terms of its students as well as its resources.

4.2.3 Case 3

Case 3 is also a school that exceeds in sustainability. In particular, the work of the school in relation to sustainable development has been acknowledged by Ofsted (3, 3a), the county council (County council website, 3), the school itself (School website, 3), external awards schemes for its work in sustainability such as Green



Figure 4-5: Case 3 Student Gardens

Flag (Ofsted, 3) and nationally, getting an Outstanding Sustainable School Award (National awards website, 3). The awareness of sustainable development in the school is high and can be traced to the work the school has been doing

since 1960's. The school has fully embraced working towards

sustainability (Head teacher, 3, TA interview, 3), *"we are a leading school in sustainability... It is at the heart of everything we do"* (Staff questionnaire, 3). This school is larger than average (Ofsted, 3) and the proportion of pupils with a disability or special educational needs is above average (Ofsted, 3). However unlike in Case 1, upon entrance to the school, pupils have standards that are *"close to those normally seen at that age"* (Ofsted,3) and the school *"meets the current government floor standard"* (Ofsted, 3).

In addition, the proportion of students eligible for free meals is below average. Its overall provision of education is high, with recent Ofsted 'good' marks and some 'outstanding features' in teaching (Ofsted, 3). Case 3 brings attention to ESD using a continuous agenda and contrary to Case 1, ESD in this case emerges in a more advantageous local context.

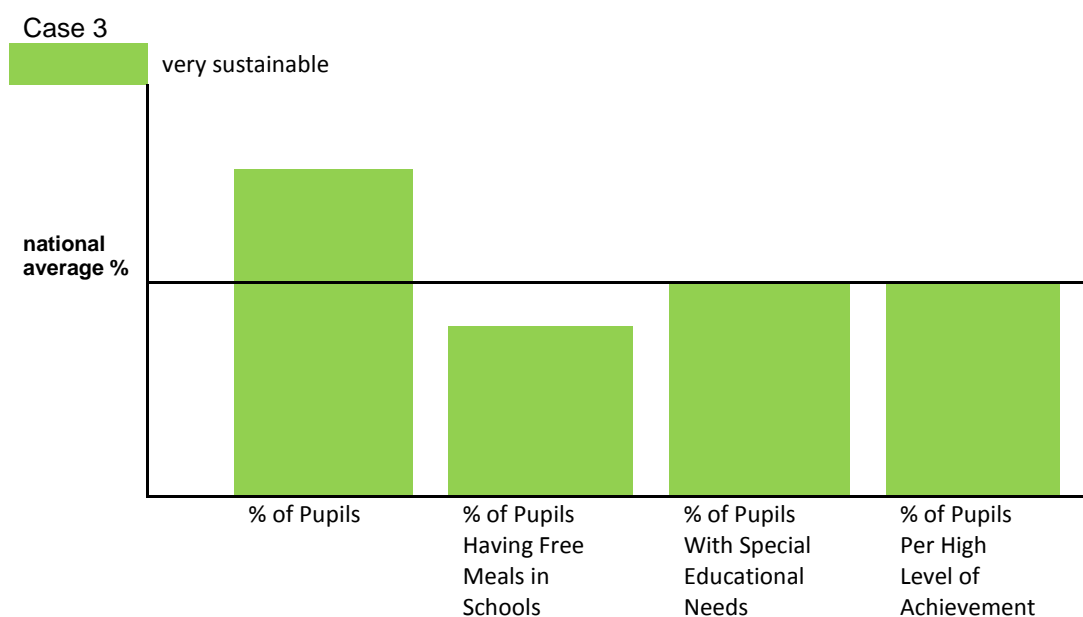


Figure 4-6: Case 3 Profile On A National Level

4.2.4 Case 4

Case 4 school is larger than the average primary school with a growing intake from 444 children (Ofsted, 4) to 549 in a year (Ofsted, 4a). The school includes children from 26 different cultures (School website, 4) and 79% of students speak English as an additional language, which is four times the national average (Ofsted, 4). The number of students entitled to free school meals is higher than the national average, but the proportion of students with disabilities is average (Ofsted, 4 and 4a). Despite the disadvantageous local context, the school “*exceeds the government’s floor standard¹*” (Ofsted, 4). And recently the school received an ‘outstanding’ in its Ofsted report. At the same time, this school is not known for its work in sustainable development.

The external documents such as school website (School website, 4), Ofsted reports (Ofsted, 4 and Ofsted, 4a) as well as other articles about the school, have no mention of the school working towards sustainable development. However, the

¹ Floor standard is a targets measurements set by the government in reading, writing and maths, which is part of accountability scheme between the government and the schools (Teachers.org.uk, 2014).

head teacher and almost half of the staff who took part in the research have a general awareness of what sustainable development and Education for Sustainable Development (ESD) could be.

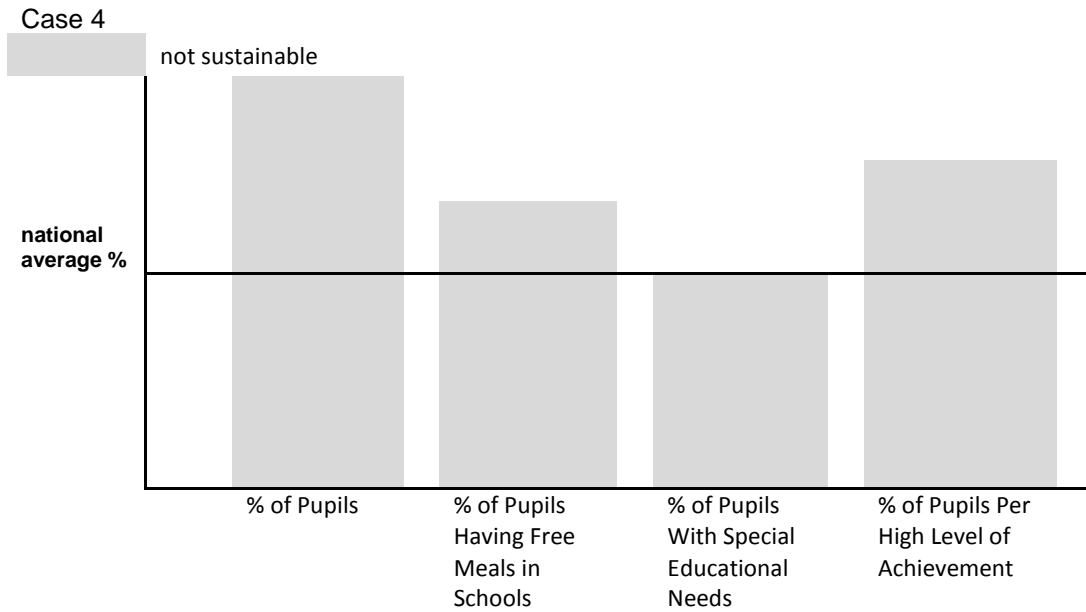


Figure 4-7: Case 4 Profile On A National Level

4.2.5 Case 5

Case 5 is the school that is currently in the early stages of its work in sustainable development, as it has been pursuing it for the two years prior to the research. It is the smallest school in this research, with an intake of only 78 children. As in Case 2, it is in an advantageous area. The percentage of students with special educational



Figure 4-8: Case 5 Outside Area

needs is average, whereas the percentage of students eligible for free school meals is below the national average. The school meets “the government’s current floor standards” (Ofsted 5a) and some of the students have been attaining above average.

Throughout the years, the school has been receiving a consistent 'good' mark from Ofsted for its service provision including teaching (Ofsted 5a, 5b, 5c). The school expresses its interest in sustainability through its website and the county council lists the school as receiving a Silver Award from Eco Schools in 2009 (County Council Website, 5). However, the most recent Ofsted report (5a), whilst mentioning other awards the school has, does not mention Eco-Schools Silver Award or any major work that school does in relation to sustainable development. The knowledge of ESD in the school is sporadic. There are few individuals in the school including the head teacher who have awareness of ESD but on the whole the school does not seem to be aware of ESD.

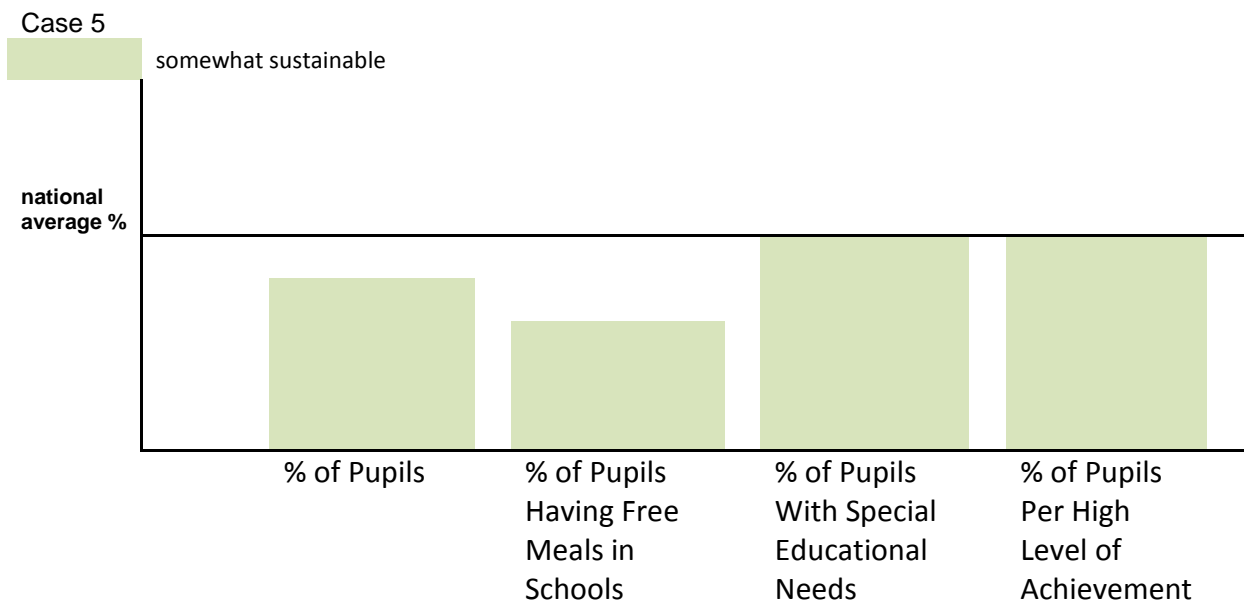


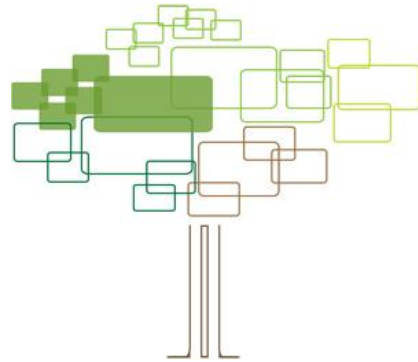
Figure 4-9: Case 5 Profile On A National Level

Therefore, unlike the previous schools, Case 5 may be seen to have some knowledge and activity with ESD but it is at a very early stage and with only some knowledge in the area.

4.3 Conclusion

School profiles suggest that whether or not the school is working towards ESD is not based on its size, its local context, or whether the context is advantageous. For example, a very large and the most disadvantaged school of all cases in this research, Case 1, is recognised as one of the most sustainable schools. This poses a question of how such a school has been able to develop approaches and conditions, despite its challenging context, that lead it towards sustainability. In addition, the school profile also highlights one of the most advantageous schools, Case 2, to focus on Eco-School agenda, or an ESD 1 agenda as defined in literature review. Again, this raises the question, what are the conditions for the school to look beyond the behaviour change and engage with an ESD 2 agenda? At the same time, ESD does not directly lead to an outstanding student achievement as measured by the government. Cases 1, 2 and 3 that have been recognised as sustainable, have been marked in their recent Ofsted reports as 'good', whereas Case 4, the school that is least engaged with ESD has received 'outstanding' award. This raises the question, what would motivate such a school to pursue ESD? These and other questions are discussed in the following section of cross-case analysis.

5 Developing themes



The following section presents cross-case analysis of the five cases. It does so through themes that have been identified and developed as a result of within-case analysis conducted for each case (see APPENDIX I). The cross-case analysis uses various types of matrices as discussed in Chapter 3 to support the development and discussion of each theme.

5.1 Defining Sustainable Development

An understanding of sustainable development varies from school to school, with Cases 1 and 3 having a broad understanding of the term, whereas for Cases 2, 4 and 5 it is narrower. For example, all cases recognise that there is a relationship between man and nature, although this concept is only articulated by Cases 1 and 3. Others define it through ‘patterns of behaviour’ and its ‘negative impact on environment’ with Cases 2, 4 and 5 narrowing it down to define it as particular behaviours that ‘deplete resources’. This narrow definition leads Cases 2, 4 and 5 to define sustainable development as ‘moving away from such behaviours’. On the other hand, Case 1 and 3 perceive it in broader terms, as change in the established relationship, moving away from harmful relationship to the one where the two entities co-exist in harmony. Less mentioned patterns of negative behaviour in ‘society and economy’ are mostly recognised by Case 1 and 3. Case 3 recognises them briefly, expressing its focus on environment, while Case 2 does not articulate these patterns, but has a view of them occurring ‘somewhere else’ and not relating to the school. Cases 1, 2 and 3 also see a relationship between actions taken now and their affect in the future, and the importance of starting to move towards

sustainable development at the present. This places emphasis on doing and change that is taken forward by the schools when this definition is applied to education.

5.2 Defining Education for Sustainable Development

When defining ESD, all cases focus on creating an impact on children. However, what the impact should be varies. Some relate it to the development of a whole child whereas some relate it to the development of specific behaviours and knowledge in children. All schools recognise **ESD as a process that encourages development of behaviours in children that are practical and seek to minimize impact on environment, such as recycling.** However, while Case 5 defines it through specific behaviour, Cases 2 and 3 expand it to define children as ‘eco warriors’ or ‘responsible citizens’, this broadens the spectrum of behaviours, skills and knowledge that children can learn through ESD. Cases 1 and 3 identify that ESD goes beyond behaviour; this education touches on values and the emotional well-being of children. ‘Doing’, or creating an impact, is an essential element of ESD, perceived by Cases 1 and 3 to lead to the development of self-worth in children. *“And doing is a very, very important part of their self-worth”* (Head teacher, 3). In addition, Cases 1 and 3 also view ESD as a way to ‘enrich curriculum’, which leads to an increased drive for learning in children. **Case 1 and 3 therefore place emphasis on ESD as a development of children holistically, whereas Case 2 and Case 5 perceive it as educating children to create a particular environmental outcome.** Although Case 4 defines ESD in hypothetical terms, there is also a view of ESD as creating an impact, but the tendency is to acknowledge the impact through behaviours, as Cases 2 and 5 do.

Cases 1, 2, and 3 view ESD as applying to all areas of the school, the curriculum (formal and informal), organisational culture, school grounds, and community. However, whilst Cases 1 and 3 view these areas to be integrated, **Case 2 perceives it somewhat separate, particularly separation between the curriculum and other areas of the school.** Case 5 focuses mainly on the informal curriculum and creates separation between the formal curriculum and the school grounds. Case 4

recognises ESD in relation to not only curriculum but also to the rest of the school, where the school ‘models sustainable lifestyle’. However, it might be suggested that just as Case 2, the school draws a distinction between ESD and curriculum and ESD and the rest of the organisation.

5.3 Defining Sustainable Development and ESD Conclusion

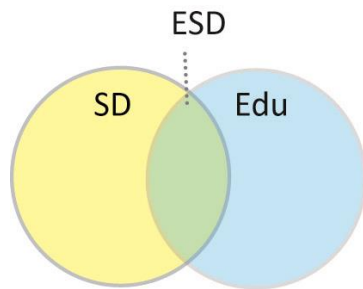


Figure 5-1: ESD is Defined By Schools Integrating Definition of Sustainable Development (SD) and Education

There seems to be a correlation between how the school defines sustainable development and how it defines the application of sustainable development to education (Fig 5-1). If the school defines sustainable development in a very specific terms, such as moving away from a particular behaviour, then teaching for change in that behaviour will feature in the school’s definition of ESD. This is a narrow approach and it reflects theories of ESD 1.

However, if the school defines sustainable development in its broader terms, then it will reflect in its ESD definition as creating impact on the whole child. This holistic definition of ESD that considers behaviours, values, well-being, and knowledge of children necessitates education that goes beyond behaviour change. Therefore it may be more closely associated with the theories of ESD 2.

In addition, part of the ESD definition is also about identifying where within the school ESD would take place. This reflects how a school defines the relationship between curriculum and the school. For some schools, all elements of the school integrate, whereas for others the formal curriculum is separate to an informal curriculum and to the development of the whole school. Therefore, in the first instance ESD is defined as holistically integrated across the whole school, whereas in the second instance, a separation is drawn between the educational purpose of the school and its organisational behaviour. In this research Cases 1 and 3 define ESD as broad and integrated, whereas other cases tend to separate it.

5.4 Approaches to ESD

From cross-case analysis, how schools approach ESD may be said to be based on several factors:

1. Schools' definition of ESD (see Section 5.3);
2. Schools' view of ESD as a particular type of strategy;
3. Schools' definition of the relationship between children, school and community (see Figure 5-2);
4. A set of topics, values and concepts that are derived from a broad range of sources
5. And how these are embedded or addressed.

5.4.1 Defining strategies

Case 1 views ESD as an 'improvement strategy' for the whole school, where all elements, curriculum (formal and informal), grounds, and operation are viewed as being **integrated** with each other (see Figure 5-2). The improvement strategy is based on the **improvement of the experience** for the children, "*they are a raft of experience*" (Deputy head teacher, 1), which correlates with the view of the relationship between children, school and community. In particular, community is seen as integral to children's overall education as the school itself, and therefore to be a strategic place for the school to have an influence.

"We think well children spend only 15% of their waking hours with us a year, they spend 85% waking hours in the community therefore that is an opportunity to take more of a stake in the community" (Head teacher, 1).

Therefore, when the school embeds sustainability, it does so across all the elements of the school as well as extending its scope of influence to include the community.

Case 2 also views ESD as an **improvement strategy for the whole school**, with the focus on the children, "*to help children to become aware of their role in sustainability*" (Staff questionnaire, 2). The elements of the school are also viewed to be integrated, which means sustainability is embedded in the curriculum (formal and informal) while having a direct impact on the school's operation and grounds.

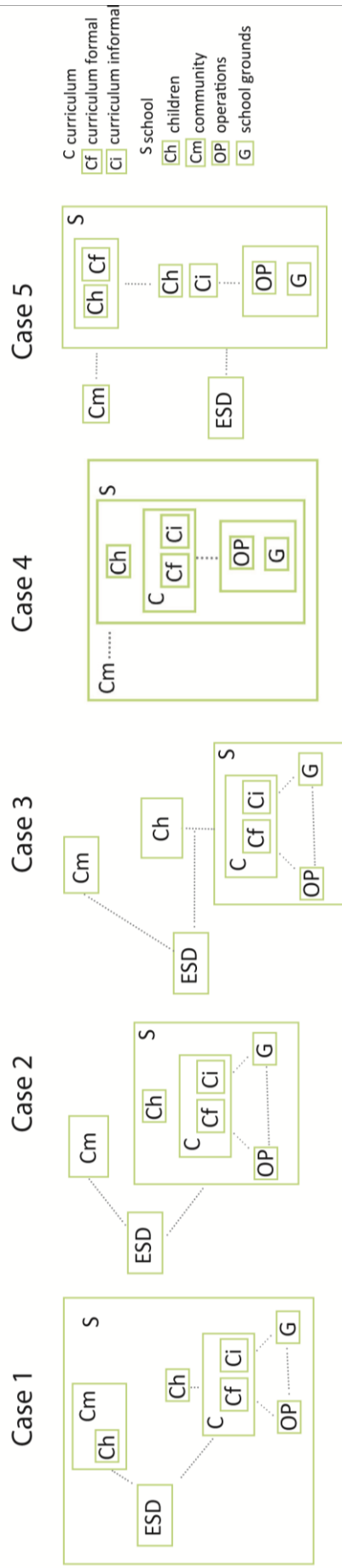


Figure 5-2: Relationship Between School, ESD, Children and Community

This integration however is not as pronounced as in Case 1, nor occurs as often, and unlike Case 1, Case 2 has less awareness of such links. In addition Case 2, unlike Case 1, does not perceive people in its community to be in the remit for its work on sustainability. Instead, community is perceived to be external to the school, a knowledgeable stakeholder in the issues of SD that provides the school with the support and motivation. *“We get that level of support from parents, children are already quite aware of issues...”* (Head teacher, 2).

Case 3 views ESD as an **improvement strategy** for the school, in particular the focus is on **improvement of the relationship between the school and the children**. The school is perceived as an integrated whole, whereas children are seen as the central stakeholder.

The aim of the school is to create a strong, successful relationship between itself and children. ESD with its emphasis on ‘doing’ and ‘experiential learning’, is perceived to be essential to such a successful relationship. *“Doing is a very very important part of their self-worth, in terms of wanting to contribute to their school and they are passionate about it”* (Head teacher, 3). ESD therefore is embedded across all integrated elements of the school, whilst always focusing on the curriculum (formal and informal). Like in Case 2, community is perceived to be external to the school, but a major element in supporting the school’s work towards ESD. The integration of the community with the school is much stronger than that of Case 2, with greater opportunities for involvement.

Case 5 also perceives ESD as an **improvement to the whole school** with children at the centre of the strategy. However, **elements within the school are not perceived to be fully integrated**. In particular, school grounds, operations and informal curriculum are viewed to be linked, while formal curriculum is perceived to be separate to the rest of the school. This is reflected in the work that Case 5 does while bringing ESD into the school.

When coupled with the view of ESD as change in behaviour, most of the work Case

5 does happens at the **informal curriculum** level. There is also lack of awareness of the role that the community plays for the school. It is not recognised as a major stakeholder, nor is there a relationship drawn between the children and the community. However some of the work the school does seeks to reach out to the parents. This therefore could be further articulated and consolidated.

The view of ESD by Case 4 is currently hypothetical, yet it is also viewed as a possible **improvement school strategy**, which is synonymous with other schools. It also recognises that the change needs to occur at different levels of the school and to have an impact on children. However, the view of formal and informal curriculum and the view of operations and the grounds do not seem integrated when it is related to ESD. At the same time, the current non-ESD strategies that are applied to the school's improvement show that there is some awareness of the integration between the grounds and the formal curriculum. *"What I am looking at in the flexible learning space is to be able to adapt that space, according to the learning style of what you are teaching..."* (Head teacher, 4).

5.4.1.1 Defining strategies conclusion

While all schools view ESD as an 'improvement strategy' for the whole school with an emphasis on the impact it might have on children, what such impact might be varies. This is partly due to '**what is being improved**' and **whether the school sees different elements in the school to be integrated or not (see Figure 5-2)**. For example, in Case 1 the focus is on development of the 'whole child', providing children with the holistic experience of education. This school views the whole school and the community as being integrated and contributing to such experience, and therefore relates ESD improvement strategy to all the school's elements. In some cases (2 and 5), the focus is on changing the behaviour of children and the knowledge needed to change it. Case 2 sees school elements as being integrated (except for community) and therefore applies its strategy to the whole school. Case 5 views the formal and informal curriculum, as well as other school elements, as separate and therefore focuses on them individually, with some integration of the

informal curriculum and school operations. Case 3 describes ESD strategy not as an improvement of the children's experience, but as a strengthening of the relationship between the school and the children. It identifies important elements in such a relationship and including the process of doing that, it seeks to encourage through ESD. Therefore, it really brings to the fore the two interconnected elements (children and school), and ESD as an improvement strategy that encompasses the development of the children and development of the school simultaneously. For Case 4, where ESD has not been yet fully developed, the distinction between creating an impact on children through ESD and the school remains. In Case 1, the improvement strategy expands to include the impact on community. For others, while community is essential to the schools' change towards ESD, it is not viewed as part of the schools' development remit. It may be concluded that Case 1 has the most expansive strategy including all elements and stakeholders of the school, while others do so to a lesser degree.

5.4.2 Issues associated with ESD and their sources

The previous section has focused on where within the school, change towards ESD takes place and what some factors that determine that are. This section discusses different values, topics and concepts associated with ESD that schools try to **solve and embed** while undergoing change. These issues are central to the schools' change process.

5.4.3 Healthy Living and Value of Care (self, others, environment)

A common issue that is embedded across all schools is **healthy living** and a common **value of care**. All schools have to address these, as they are part of governmental agenda (healthy schools and Every Child Matters (ECM) agenda) driven by encouraging schools to place more emphasis on the children and their well-being. However the scope at which they are addressed varies, this is partly based on whether the school perceives it as part of an ESD agenda and whether the school develops the topic/value through understanding the needs of its local context and its children.

Cases 1 and 3 view healthy living and value of care (self, other and environment) to be an essential part of an **ESD agenda** and to be an **essential part of the school itself**. For example, healthy living in Case1 is a topic that has been developed since 1996. The issue has risen from the need to increase pupil attendance in the school due to poor health and poor eating habits, with *“no adult role models for learning”* (Online report, 1). The school took on the role and began to give all students fresh fruit and drinking water (Online report, 1). Currently the school’s goal is expanding to *“show children how to achieve healthy lifestyle”* (School Prospectus, 1) approaching it as the **‘development of a whole child’**. The issue is approached in more than one way. Within the school the focus is on engaging children with the real world experiences (Deputy Head teacher, 1) including sporting activities (School Prospectus, 1) as well as providing children with ‘field to fork’ knowledge, where the care goes beyond the child and towards environment. The bridge between emotional well-being and care for the environment is seen in the school’s curriculum, developed for active learners, and an intervention program for students who have emotional difficulty.

Case 3 also perceives this connection between the emotional well-being, or care for self, and active participation in caring for others and the environment. Multiple opportunities are developed for the students to engage with the environment through the school clubs and the formal curriculum. **Local context is used as an inspiration** for developing such opportunities, for example the use of the school’s farm, beehive, gardens, and woodlands. Here the school also practices the development of **‘a whole child’**, both emotionally and physically, encouraging physical activities and healthy eating.

Value of care for self, others and environment may be found in both schools (1 and 3) across several levels, in the formal and informal curriculum, the projects that the schools work on and other themes and concepts it embeds. While the value for self, others and the environment are all part of the ECM agenda by the government, the government mostly oversees the value of care for self and others. In these two schools however, the value of care for environment has a strong presence in all the

work and ethos of the schools. There are several reasons for this, care for environment is perceived to be integral to the 'whole child' development, it is also perceived **in broader terms** in relation to the world and whether the school can have an impact. *"It is seeing your school as a part of the sustainability movement..."* (Head teacher, 1). *'It's all about the wrap around 'care' of everything! Environment/people in it/ what we're doing to the world... etc.'* (Staff questionnaire, 3). In addition, both schools derive value of care (self, others and environment) from their local contexts. For example, Case 1 is situated within a deprived area where care for environment is closely interconnected with establishing care for self and others. *"The main thing for us here we are on an inner estate, very poor families, lots of older siblings that are in an out of prison, and things like that. So we start basically by if you care for your school, in your environment, then you will care for yourself"* (Teaching assistant, 1). In Case 3, the history of the school and its care for environment has been preserved and built upon in its current work. *"The history of the school, has always been closely linked to what we would consider in old vocabulary, a nature study, or environmental study "* (Head teacher, 3) (see Figure 5-3).

Cases 2 and 5 also associate healthy living agenda with ESD and practice value of care for self, others and environment. However, the definition of these topics and approach towards them is narrower than those of Cases 1 and 3, and is less consistent. For example, the schools do not view themselves in relation to a wider context and derive most of the issues from the NGOs, such as the Eco-Schools program, rather than from the local context. *"That's another route why we went for Eco-Schools as well, we went that route, because that gives us, not target, but*

suggestions of what you can look at next" (Head teacher, 5). This narrows the definition and how the schools approach the issue to



Figure 5-3: Case 3 School Farm

that which is prescribed by the program.

Issues of healthy living and care for self, other and environment are sometimes perceived as integrated while other times not, and most issues do not consider the 'whole child'. For example, Case 2 emphasises physical well-being rather than an emotional well-being as a healthy living agenda. The agenda of 'walk to school' combines the school's agenda of healthy living with care for the environment. On the other hand, the ongoing gardening in the school is only described as engaging in **behaviours of care for the environment**, and is not associated with **care for self or healthy living**. Case 5 has a similar view on a healthy living agenda with an emphasis on physical well-being. It may be seen in a similar project to Case 2, a sheltered area has been constructed to encourage outdoor play during bad weather, decrease congestion in the area and *"to encourage parents to walk to school"* (School document, 5). This project combines care for self, others and environment with physical well-being. Case 5 also views physical well-being as having an objective of healthy eating, which led to the gardening project that combined topics of healthy living and care for the environment. In these two schools, both healthy living and value of care (self, others, environment) are considered, yet with an emphasis on physical well-being rather than a 'whole child' development. This lends itself to the informal curriculum and therefore these topics are less likely to show up in schools' formal curricula.

Case 4 views healthy living through physical activity with the focus on care for self. *"To improve the quality of health, improve the quality of sports, games and such things at the school"* (Head teacher, 4). This view then relates to physical activities that are encouraged in the school and further planned for in the school development. Value of care for self and others may also be seen in other topics and concepts that are specific to the school, whereas value of care for environment has been mainly considered in relation to the schemes of saving money, detached from its influence on the children.

Two topics that relate to value of care of others, and relate to social sustainability are the topics of community outreach (Case 1) and diversity of students (Case 4)

where values of diversity and equality are important. Both topics have an origin within the local context, a deprived community and a multicultural community. Case 1 relates its work to ESD, partly because community outreach has a strong correlation with ESD work that a school engages in, particularly developing eco literacy in the community and seeking to solve fuel poverty. In Case 4, the work is not associated with ESD, nevertheless the topic is addressed through formal curriculum and community outreach. It is based on equal opportunity to education and value of respect for diversity, making it a complex and a sensitive topic (that may be viewed as an ESD topic).

5.4.4 Conclusion

Whilst all cases demonstrated some work on two government agendas, healthy living and value of care, their approaches differ widely in depth and scope. In particular, if the school perceived healthy living to encompass development of the 'whole child', it seeks to encourage its development in all areas of physical and emotional well-being, through a formal and informal curriculum (Cases 1 and 3). If it is viewed as development of a particular section of it, then the school will focus only on the development of that area (Cases 2, 4 and 5). The scope of the schools' work is also based on whether the school views care for self, others and environment to be an integrated agenda, or separate. In Case 1 and 3 however, these issues are integrated. Care for self integrates healthy living and care for environment, and care for environment integrates care for others. In other schools however, this integration does not exist. If the projects seem to have an impact on both the environment and children's well-being, it is viewed as working on two agendas rather than one. The involvement that each school has with the topic of healthy living and value of care seems to also be influenced by whether they are derived mainly as a result of the governmental agenda, or have a strong relevance to the school itself, the needs of its children and the local context. When the school builds upon the needs of the children and its local context, there seems to be a greater engagement with it. This is strongly expressed in Cases 1, 3 and 4. Value of care for self and others is integral to all schools, however, value of care for the environment

is not. In Cases 1 and 3, value of care for the environment is established in the schools through their local contexts and in relation to broader concepts such as becoming part of a sustainable movement and therefore is really grounded in the schools' work. Cases 2 and 5 care for the environment is established through external input, such as specific aims and objectives found through NGOs and therefore is less prominent. In Case 4, care for the environment is an agenda of only a few building projects.

5.5 Other issues

Other topics that schools embed into the development of their schools are less congruent with each other, and are more individual to each school. Cases 2 and 5 have used the Eco-Schools program to obtain some of the topics to work with. These schools engage with specific topics of protecting the environment and minimising impact on the environment, particularly reducing energy use and recycling. The scope of the topics that Case 2 engages with is somewhat greater than that of Case 5, yet all are bound to the Eco-Schools program that has a great focus on behaviour change and a specific outcome.

Case 1 also works with the topic of energy, but expands it beyond decreasing energy use, to becoming carbon neutral. Initially based on multiple sustainability frameworks (Head teacher, 1 and Deputy Head, 1) the issue the school sought to address was energy efficiency. With time, **the scope of the issue was extended based on expanded awareness of broader concepts and possibilities**, to an aim of becoming carbon neutral whilst embodying energy efficiency and the utilization of other resources. This exemplifies the next step in development of the goal that the school aims to accomplish. **This development of the aim** is also observed with Case 3. As Cases 2 and 5, Case 3 initially began with minimising impact on the environment with owning bees and the farm, yet some of the local projects allowed the school to become 'nature's ambassador' where it focused on protecting, saving and utilising nature. *"And if we didn't take control of the woodland, it would be lost to building development"* (Head teacher, 3).

The issue of managing resources that Case 4 seeks to work with is not derived from the school's value of the environment, but rather from the local context, the increase in children. *"We are going up to three form and it's cheaper to refurbish and to change the structure of this building, this campus, than to build one form entry school"* (Head teacher, 4). In this case, the intention is to save money rather than to care for the environment, yet, the topic that the school is addressing is nevertheless one of the topics that relate to sustainable development, the issue of resources.

5.5.1 Concepts

In addition, there are concepts that individual schools work with which differentiate between the schools and that are derived from the local context of the school, the children, or the broader concepts. The schools are trying to achieve these concepts by considering them throughout their processes and decision making.

5.5.1.1 Practicality and small scale

For example Cases 2, 3, and 5 consider the impact that their work can make in relation to sustainable development. All cases agree that the work needs **to be practical and on a smaller scale**, in order to create tangible results. *"They can feel they have a direct impact even if they are only a small scale and given that our children are only five to eleven, start with small steps"* (Head teacher, 3). This is the concept that is derived by the school from the children, or the 'client group' of the school.

5.5.1.2 No waste and closed loop

Cases 1 and 3 also bring in the concepts of 'no waste' and 'closed loop', "*everything*



Figure 5-4: Case 1 Waste Management During Construction Project

forms everything else" (TA interview, 1). For Case 1, these concepts are driven by the wider contexts and the research of the school into sustainable development, it is explored both in the formal and informal curriculum as well as in school-wide projects. During construction of the new eco build, waste reduction strategies were considered (see Figure 5-4), such as "*reducing construction waste arising through efficient design and onsite reuse of materials*" (New Building Information, 1)(see Figure 5-5).

	Waste Collected	Waste Recycled/ Recovered	Percentage Recycled	Cost
Report Grand Totals:	104,360	88,899	85.185%	£



Figure 5-5: Case 1 Waste Recycled (blue) and Waste to the Landfill (orange) After Eco Build Project

For Case 3, such concepts are more closely related to the local context, and the school owning animals, gardens, allotments, where waste from one source becomes nutrient for the other. Topics such as ‘life and death’ are part of both the informal and formal curriculum. The harvest from the garden will go into the kitchen and into the children’s school dinners. In addition, extra produce is sold to the parents and staff and the money is put back into the school to support its local resources (TA interview, 1). In both cases, close attention to these concepts allows schools to practice some aspect of **self-sufficiency**.

5.5.1.3 Networks

Network is a concept that is also considered by Cases 3 and 4, and is seen as a means to share knowledge and resources. *“So sustainability is also about the contacts that you’ve got...Give them something in kind, and then to have an expectation that they will help us when we need them”* (Head teacher, 4). Whilst both cases consider the notion of networks, Case 4 places the emphasis on the

external networks, whereas Case 3 focuses on developing both internal and external networks.

5.5.1.4 Conclusion

It may be seen that the schools work with multiple issues, values and concepts that are associated with ESD, beyond topics defined by the government. Schools derive these issues from the local contexts, based on the needs of their children, or look beyond to the NGOs and broader contexts. Most cases are working with several topics/concepts in addition to the governmentally established value of care and healthy living. What differentiates the cases however is the scope with which these topics are pursued as well as the additional depth of their conceptual development. This is related to the willingness and ability of the school to engage with different levels of influence (see Figure 5-6).

Cases 1 and 3 are able to expand the issues by looking beyond the original sources, further researching their local and broader contexts. On the other hand Cases 2 and 5, work with more narrow issues presented mainly by Eco-Schools without trying to engage with their broader meanings. Case 4 works with issues primarily based on its local context, yet, these issues, diversity and networks, are particularly broad in themselves.

Most of the issues and concepts that schools refer to as ESD, focus on issues of environmental care, with only two schools emphasising their social aspects. Social sustainability is integral to ESD, but does not seem to be perceived as strongly by the schools as environmental sustainability. However, it is the perception of the school that influences how and whether such issues relate to each other and integrate with each other. Case 4 has two social issues (diversity and increased number of students) with one of these issues leading to an issue of space and therefore an issue of resource management.

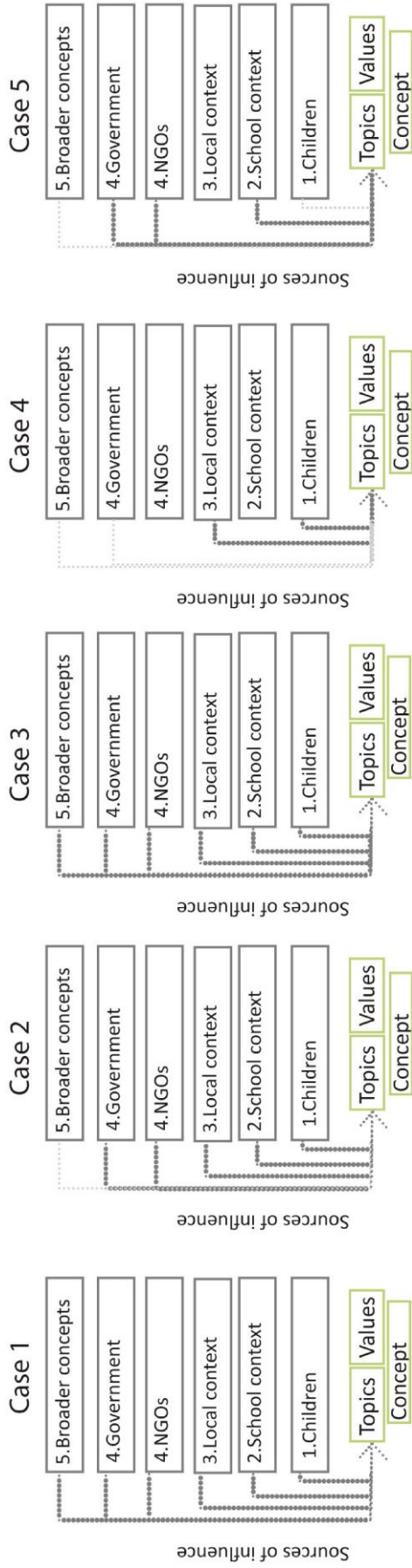


Figure 5-6: Sources For Influence On Topics/Values/Concepts

However, it may be speculated that the original source of the issue (social) is not seen by the school as an ESD issue. On the other hand, for Case 1 all issues (social, economic and environmental) are integrated. This allows the school to view fuel poverty as one of the sub-issues of deprivation and approach it from that perspective.

This provides an important distinction between Cases 1 and 3 and Case 4 where the issues are derived from the local context, are understood in depth, and have relevance to ESD. However, in Cases 1 and 3 these issues are acknowledged to relate to ESD whereas in Case 4 they are not. Considering these issues/concepts to be part of ESD agenda might lead to different solutions, as they do in Case 1.

5.5.2 Approaches to the issues

Schools show different general strategies towards sustainable development issues or in Case 4, issues that could be associated with sustainable development (see Figure 5-8).

Case 1 has been focusing on several topics that are important to the school and



Figure 5-7: Measures its Energy Use

developing them in depth. The school does so by addressing several sub-topics, which ultimately lead the school to achieving its larger aim. The large topics the school addresses are healthy living, being carbon neutral and community outreach. For example, the issue of carbon neutrality is approached in multiple ways. The school considers sub-topics of carbon production awareness, minimising energy use (see Figure 5-7), and creating energy. These sub-topics

are embedded throughout different elements of the school, including school projects, curriculum, PSHE, and school operations. *"...and having Low carbon Days*

and this sort of thing, just helps to keep the profile of it quite high all the time”
(Head teacher, 1). In addition it involves parents and community who are experiencing fuel poverty, through projects, campaigns and a new local business scheme. *“Solar panels provide hot water and the school is involved in an innovative project to fund photovoltaic panels to produce electricity using a community investment model”* (Online article, 1.).

C curriculum
 Cf curriculum formal
 Ci curriculum informal
 S school
 Ch children
 Cm community
 OP operations
 G school grounds

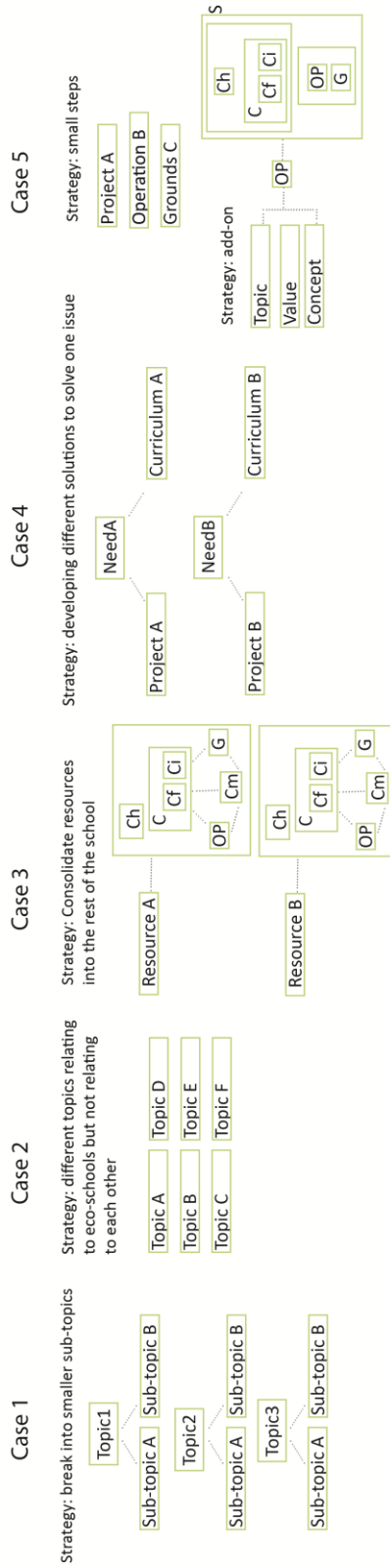


Figure 5-8: Approaches To The Topics/Issues/Concepts

Whilst Case 1 begins with a particular idea or an issue to work towards sustainable development, Case 3 focuses on a particular resource. The strategy is to protect, save and utilize the resources. The school began with the resources that were available to the school and built upon them. *“We have had some animals here since 1976...we had...beehives, couple of goats and even couple of donkeys as well”* (TA interview, 3). Yet these resources were an additional extracurricular activity enjoyed by the few in the school.



Figure 5-9: Case 3 School Resource – A Farm

The main strategy therefore has been to place these resources, the farm and the animals (see Figure 5-9), and values that are part of these resources, such as care for the environment, at the heart of the school. The school has been able to do so through engaging whole school community, children, parents and staff, and utilizing

resources in the curriculum and school’s operations. In addition to the existing resources, the school expanded its strategy to other resources such as nearby woodlands. *“And if we didn’t take control of the woodland, it would be lost to building development”* (Head teacher, 3). The school then developed a way to not only protect, but also to utilize, the resource. *“The exploitation was on the basis of coming up with the plan of how to turn certain areas of the woodland into trails, outdoor classrooms, pond platform, and places where children can play and where children can work”* (Head teacher, 3).

Cases 1 and 3 strategies therefore, although having different starting points, have an underlying approach of ‘consolidating’ and ‘building up’ the topic or issue. The aim is to build around it, to connect the work that occurs throughout the school and in the community in order to reach the same goal.



Figure 5-10 Case 2 Eco Codes - Defining the Primary Issues of the School

Cases 2 and 5 have somewhat different approaches. In Case 2, there is not one central issue that the school works on. The issues that it does engage with are based on the Eco-Schools framework (endangered species, energy use, recycling, gardening and healthy living). These topics are embedded across the school, into the projects, the operations and the curriculum both formal and informal, as Eco-Schools is perceived to be

the ethos of the school (see Figure 5-10). Yet these topics are detached from each other as the school **is not very consistent**

with where and how projects are brought in, as it practices a “*dip in and out of*” (Head teacher, 2) projects tactic. Reflecting on the National Framework, the school felt it was not integrating the issues and topics enough. “*It is something we need to look at our long-term planning and how we would really integrate it into the curriculum*” (Head teacher, 2).

The current approach of Case 5 towards ESD may be described as “*taking small steps*” (Staff questionnaire, 5). These steps derive from the external sources such as Eco-Schools, county councils, and other schools on issues of waste, water and energy use, health and well-being. **However the school approaches these issues without a larger intention**, instead the school has been responding to “the *need to do something*” (Head teacher, 5). The lack of overall vision leads the school to redefine its plan at every step, “*and then as a staff we thought we don’t know where we want to take it*” (Head teacher, 5). Case 5 approaches ESD in the ‘disjointed’ approach similar to Case 2. Unlike Case 2 however it sees ESD as an ‘add-on’ and therefore is involved in much less work within the area. “*Because you can get involved in so many awards...like healthy schools awards, which was*

another one actually....a lot of people see it as an add-on”” (Head teacher, 5).

Case 4 experiences some external issues that are specific to the school and the need to respond to these issues drives some of the school’s improvement and developmental approaches. For example, the school showcases **the need** to address an issue of space, due to the *“increase of number of births, the shortage of school places in the local community is increasing”* (School online article, 4). This need to expand became a goal for the school to create space to accommodate the rising number of children. Unlike in other cases, Case 4 attends to **the ‘needs’ rather than issues or aims** it sets for itself. Whilst it does not view these needs as ESD issues, the approach it uses is similar to that of Cases 1 and 3. In particular, the school addresses its needs in more than one way. For example, in the case of creating space, the head teacher extends the boundaries of space-creating opportunities by creative shift in perception and critically inquiring *“what can be done with the space instead of traditional build?”* (Head teacher, 4). This leads the school to create space through its physical alteration as well as through adaptation of flexible learning space pedagogy. Unused spaces were identified (toilets on one end of the school) and taken out, two buildings were connected to create an extra classroom (see Figure 5-11). More space was created through flexible learning, where the same space may be used in multiple ways. *“Flexible learning spaces, which is a brand new concept in schools...what I am looking at in the flexible learning space is to be able to adapt that space, according to the learning style of what you are teaching...”*(Head teacher, 4).



Figure 5-11: Case 4 Two Buildings Joined Together to Create an Additional Classroom

5.5.2.1 Approaches: Conclusion

This section illustrates the array of general strategies that the schools can use to approach ESD (see Section 5.5.2, Figure 5-8). What seem to be relevant to all of them are **the issues that are being undertaken** and the level of integration when approaching each topic or sub-topic. Most issues the schools seek to work with that relate to ESD are somewhat similar, from energy use, healthy living protecting and utilising resources. However, the reasons for the schools to work with these issues are diverse. In most cases, the schools seem to start work with a particular approach or a vision. These visions may have different scope, from a wide vision of becoming carbon neutral to a narrower vision of doing something relating to ESD. In most cases, the vision has been constructed over the years. For Case 4 however, the source of the issues is **a specific need** based on its local context that is so strong that the school has to prioritise it and does not have time to reflect on its work to create it into a vision. This limits the school's work to one of an immediate **'response to the need'** rather than **'growth of the vision'**.

In addition, the schools also have different approaches to these issues that in turn affect the scope of the issue. The **detached** approach that is practiced by Cases 2 and 5 allows the school to work on multiple topics allowing the school to stay open to different opportunities, but leads to little consistency in the work. For example, the school may address one sustainable development issue in the curriculum, and another issue in the projects. This leads the school to engage with the topics and have the knowledge of the **topics at a marginal level**. On the other hand, Cases 1, 3 and 4 use a **consolidating** approach. In this approach, the schools work with a small number of **large aims**, and break them down to smaller subtopics that are addressed throughout different elements of the school. This means the schools are working with fewer issues and topics, but the topics are addressed at a deeper level and the school gains a deep knowledge about these topics.

5.5.3 Consolidating approach strategies

Schools that use the ‘consolidating approach’ do so using different strategies to embed ESD into the school (see Figure 5-12). Although some strategies seem to be more prevalent than others in a particular school this is more to do with the context of the school rather than their general advantage.

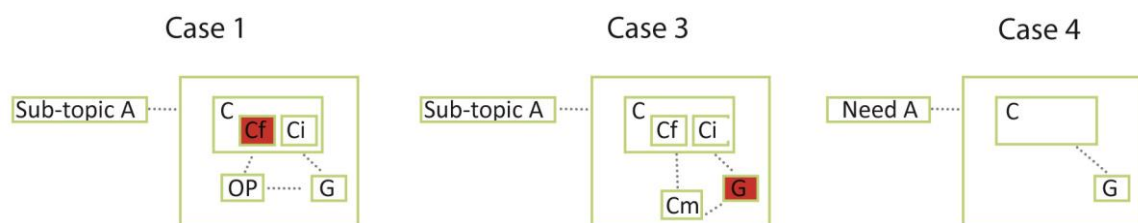


Figure 5-12: Consolidating Strategies

The school might first bring **the topic up within the formal curriculum** and then seek to explore it in other areas of the school. For example, as Case 1 notes, it is about *“getting the children to discuss the issues and think what should happen...and then try to make some of those things happen in reality”* (Head teacher, 1). The topic of fair trade is discussed in the classroom and then is embedded into school’s operation as ethical procurement as well as in the grounds of the school as a fair-trade shop (Head teacher, 1 and School Prospectus, 1). Another way to include the

topic is to start with the **development of the grounds that is something tangible**. For Case 3, it was the development of the farm/gardens, which then provided opportunities for education, both formal and informal, to all children, some parents and external organisations. For example, teachers began to bring the grounds into the curriculum. *“So numeracy young ones can go out and count legs on the sheep, and how many chickens we have, and the older ones are calculating how much feed the animals have”* (TA Interview, 3). The produce, the outcome of the resources, such as eggs could be taken to the community, for example it would be sold to the local community and the money would be given back to the farm/gardens. Or the produce may be used by the student clubs or in the student kitchen.

Case 4 exemplifies an approach that has no order, but rather a need, such as space in the school, discussed previously. It is approached simultaneously, in more than one way, both through the grounds and through the formal curriculum.

Whilst Cases 3 and 5, as discussed previously, have focused on one issue per one element of the school, this section looked at cases that address a particular issue in a more integrated way. The starting point for integration however varies from case to case. The entry point may be the curriculum or the school grounds, or the school might choose to approach an issue simultaneously from more than one entry point.

5.6 Involvement of students

Students are a central component of every school and in Cases 1, 2, 3 and 5 their involvement with ESD is seen as essential. However, the involvement of students varies from school to school. This is partly based on the school’s definition of the relationship between the school, the children and the ESD agenda. Case 3 draws a **strong link between the school’s overall sustainability agenda and the involvement of the students in the process**. *“... the values of caring for the environment rest on this central concept that children should be involved and they are at the centre of what you do”* (Head teacher, 3). For Case 3, the children’s involvement **throughout all aspects of the school’s development towards ESD**

therefore is essential. *“You can make quite tangible differences to your impact by involving the children”* (Head teacher, 3). This opinion is also noted in the rhetoric of Case 1, although it’s not as straightforward. *“It’s getting the children to start even at primary school level to discuss the issues and think what should happen and what, in their opinion, should happen”* (Head teacher, 1). In Case 2, whilst such a relationship is not verbalised by the staff or leadership, it may also be noticed in the work and the involvement that students have within the school. Case 5 also reflects the view of students to be an integral part to the school’s general development. *“The children actually own the school...we encourage them to own the school”* (Head teacher, 5). This is largely due to the small size of the school, *“where students are more grown up, have a lot of input from the adults to support their conversations”* (Head teacher, 5). This is also seen in the initial stages of sustainable development work within Case 5. *“We had a big interest from children, it came from children, like why don’t we recycle”* (Head teacher, 5). However, this relationship is not as defined in any other school like it is in Case 3.

If Cases 1, 2 and 5 view children as having **some part** in the development of ESD in the school, **Case 4 breaks the link between the children and the school development.** The children and the school are viewed as separate entities, where the school is positioned to provide service to students who are its clients. *“So the school has got a good tradition of thinking differently about education partly because of our client group”* (Head teacher, 4). In addition, as the school does not deliberately pursue ESD within curriculum, the involvement of the students with an ESD agenda does not exist. However, whilst students do not have direct participation in the school’s development, there is an indirect impact on how the school provides its education. *“Our biggest asset ...is knowing your child both academically and emotionally”* (School website, 4). The school’s multiculturalism leads it to the development of varied and innovative approaches to education. Moving away from traditional or *“lecture type of teaching”*, the school is involved in *“visual, kinaesthetic, multisensory type of learning”* (Head teacher, 4).

While, Case 3 positions students as an integral part of the school's development in a very pronounced way, in other cases this is acknowledged to a lesser degree.

However, the view of the students' that is more clearly stated in Cases 1, 2 and 5 is that children are a main stakeholder that the school seeks to move towards ESD. In this instance, the focus is on the development of the children separate to the development of the school. For example, the overall aim for Case 1 is to engage its students in a continuous, building-up process throughout the years for *'children to gain a growing understanding of different aspects of sustainability'* (Staff Questionnaire, 1). Case 2 describes the aim of the work to help children to *'become aware of their role in sustainability'* (Staff Questionnaire, 2). And Case 5 also sees it about the development of the child. *"My view even though there are 80 kids in the school, if a quarter of those, 20 of them, go on to think of about ecology and then they have contact, then it's going to make an impact along the way"* (Head teacher, 5). This view of children and the role of the school seems to bring more focus on ESD within the curriculum, whether it is formal or informal, and less on students' participation in the rest of the school's development.

How the schools view the relationship between the institution and the children seems to be relevant for ESD and the children's participation within it. When children are viewed as **an integral part** in school's development towards ESD, or in some parts of it, **children become participants in the school's development process**. Where children are viewed **as independent to the school**, the development of the school and development of the child **are treated separately**. In this case, if the school has sustainability as part of its remit, the focus is on providing individual students with sustainable knowledge and skills, usually through **curriculum** (formal and informal) (Cases 1, 2, 3, 5). If the school does not have sustainability as part of such remit, then children do not participate with sustainability agenda (Case, 4). However, as Case 4 shows, how the school develops may be also affected by the indirect impact of the students and the ability of the school to respond. In addition, full integration of the children within the school development is rare, and occurs only in one school (Case 3). **This does not eradicate children's participation with the curriculum in Case 3, but emphasises the aspect**

of integration. Whereas Cases 1, 2 and 5 view children only to be partially involved in the development process, and in some cases particularly 2 and 5, development of individual children is emphasised more.

5.6.1 Involvement of pupils, purpose, means of activation and impact

This section looks at different reasons why the school involves children with the ESD agenda. It will also look at the different means by which the schools activate children and the scope of children involved with the ESD agenda. This section draws on the previous section and the difference of the focus, one being on children and the other on the involvement of children, with the school development.

One of the most common reasons for the schools to involve students with sustainable development is to help them **gain an understanding of sustainability issues, values and concepts** and **develop capacity to address these through certain behaviours, practices and skills, both on individual and group levels.** The focus here is on the development of the child. *“ESD, if effectively used within schools, should allow children to discover how they, as individuals, groups and communities, can improve quality of life now without damaging the planet in the future”* (Staff Questionnaire, 1). This is done by schools through involving children in the curriculum, daily routines, specific projects and initiatives.

5.6.1.1 Awareness of the issues

Students are introduced to the sustainable development issues and values in the classroom through their formal curriculum. For example in Cases 1, 2, 3, and 5 children are introduced to the topics relating to sustainable development in their curriculum. In Case 2, students are encouraged by teachers to talk about better ways of using/saving resources and in Case 5, children were found to *“deeply reflect on the need to protect environment”* (Ofsted, 5). In Cases 1 and 3, **awareness is created with issues across the entire curriculum.** *“[ESD] is embedded into things that we do all the time”* (Staff questionnaire, 3). *“One of the A groups in particular was looking at the book about the rain forest, it will be a book topic but obviously*

the rain forest aspect will come in very strongly on the back of that” (Head teacher, 1). Whereas, in Cases 2 and 5, this **occurs less frequently**. For Case 2, this is based on the **appropriateness of the topic** covered, for example in ‘*Geography children learn about water and the world around them*’ in ‘*Designing inventions, talking about eco fuel*’ (Staff questionnaire, 2). Whereas Case 5 associates sustainable development issues solely with **science curriculum**, which already lends itself to such issues. “*To be honest its always been there, the thing that people miss is that the curriculum is things like geography, when you’ve got [to learn] about ecology, about the usage of planet’s resources, that’s always been a part of geography topic”* (Head teacher, 5). The scope of awareness on sustainable development topics that children have in Cases 2 and 5 therefore may be said to be less than in the other two cases, as well as more limited in the scope at which they are addressed.

5.6.1.2 Complex issues

Whilst some issues could be explained through conversations and discussions with children, other issues are sought to be brought to light through **student experiences**. These issues and concepts tend to be more complex and less tangible, for example notions of natural cycles, life and death, the notion of time and closed loop principles. In Case 1, the strongest concept that children experience in relation to ESD is the concept of ‘food to fork’. Children do not only experience it through the on-going work at school, but also through small projects such as ‘extended visits’ to other places. For example, trips to places such as organic farms or forest schools (School Prospectus , 1).

“They spent a day harvesting their own food, and then preparing the food, eating the food, and they milk cows, waking up at 6 AM as the dairy herd came in to milk the cows. They turned milk to cheese, field to fork, children really experiencing where the food comes from” (Deputy Head teacher, 1).

Case 5 focused on exploring the concepts of time. This concept is explored through growing food in the garden as well as using post to communicate with a partnership



Figure 5-13: Case 3 Children Taking Care of Two Pigs That Will Go To Slaughter

school in China. *“We do it through post, because I think post is better than email because our children do everything this instant”* (Head teacher, 5). In Case 3, children explore life and death concepts and the notion of closed loop.

Life and death are explored

through the animals on the farm, where some animals are raised for slaughter and some die of natural causes. The animals that are slaughtered are not named by the children. This considers the children’s emotional well-being and helps them to keep detached. *“And some of the animals we raise for market but some of the animals we keep until they are no more, because life and death is all part of the same circle”* (Head teacher, 3)(see Figure 5-13). *“So everything else on the farm is named by the children. Apart from the pigs, because the children know when the pigs come they are here to be fattened up and then they go for meat”*(TA interview, 3). **Closed loops** are experienced through students’ participation in projects such as the garden and the farm, as well as cooking clubs, where resources feed into each other. Waste from the garden feeds into the farm, and the produce from the farm feeds into the cooking club competitions.

In this scenario, children are engaged in understanding **concepts in more depth** by applying a localised approach, most often by focusing on the needs of the school or personal experience, which makes it a more exhaustive concept for the students. For example, a concept of ‘no litter’ is taught in most cases, however, in Case 3 it is taken one step further. *“Well for us litter is a real issue because we have animals. And if animals ingest litter we get a big vet’s bill, we might potentially lose an animal, so it goes beyond it being scruffy, and tidy, to an actual health and safety”* (Head teacher, 3).

5.6.1.3 Behaviours, values, practices and skills

Children are engaged in discovering individual behaviours, practices, skills and values within the school that helps them to address some of the issues they learn about in the formal curriculum.

In Cases 1, 2, 3, and 5, students **engage in small, direct behaviours** such as turning



off lights/projectors, shutting doors and windows to save energy, recycling (see Figure 5-14), no littering and no bullying. *“Some practical ways they can see that even on an individual, on a small basis, you can actually make the difference”* (Head teacher, 2).

Figure 5-14: Case 5 Recycling Bins in the Classroom

In addition to educating for specific behaviours, Cases 1 and 3 emphasise development of value of care for the environment in students as individuals, through taking care of the animals. For example, in Case 1 students of every year engage with the farm (see Figure 5-15) to understand and learn how to keep chickens and pigs with high welfare standards



Figure 5-15: Case 1 Caring For Chickens

(Staff questionnaire, 1). In Case 3, the farm also has an extensive amount of different animals, from chickens and rabbits to goats and pigs, which provides opportunity for children **of all ages** to engage with the value of care. *“We had two lambs in the stables two years ago*

and they are called Buttercup and Summer... they don't go for meat or anything, they stay till they are old and die.... basically we just take care of them. " (TA Interview, 3).

Some issues and values that are brought up in the classroom (Cases 1, 2 and 3) as well as in the informal curriculum (Cases 1, 2, 3, 5) relate not only to the value of care for the environment, but also include the value of care for self. These topics are not only discussed in the curriculum (formal, informal) but children are provided with **opportunities to gain skills to take care of self and the environment** and therefore **experience the real benefit of such knowledge**. In Cases 1 and 3, a special emphasis is placed on all to learn the skills of healthy living and values of care. *"I go on the floating rota throughout the whole school, collect children, and they come over, they work in the garden, collect the animals, and whole idea is that every child in school will have seed to plate, look after the animals, and be part of the big project"* (TA interview, 1).

The organic produce in the gardens is used in the kitchen for the students' dinners. In addition, **the real benefit of such activities is recognised** by Case 1, who set up the **Nurture group** in response to a great number of students with learning difficulties and is a particular group with an increased learning time spent outdoors. In Case 3, gardening skills are fostered by providing children of **all ages** in the school with an opportunity to have their own small garden. *"Children if they want to they can have part of their own garden, we got loads on the other side, then they can come out at lunch time and play time and plant what they want to plant"* (TA interview, 3). Plants are nurtured in the poly tunnel for those students who may not be able to afford them themselves, and children with special needs are supported with one-to-one staff assistance. Again, Case 3 highlights the benefit of such skills and behaviours. In Case 2 children's awareness of energy use, results in increased bike riding to school. Unlike in Cases 1 and 3 however, these skills and behaviours are not proactively enabled by the school, but rather **are encouraged** in the students.

ENERGY	
Is there someone in your school who has special responsibility for monitoring the consumption of energy (electricity, heating etc.) in the school? If there is, who is it?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Praxis officer</i>
Are the energy meters (e.g. electricity meters) easily visible to pupils?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are pupils involved in taking and displaying readings?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Has your school taken any of the following low-cost steps to reduce heat loss through windows? Draught excluding strips Solar reflecting film Responsible class window monitors	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Do the school windows have double glazing, triple glazing or energy-saving glass? If Yes, then in how many rooms? (If all, write all)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No _____
Are any external (outside) doors self-closing? If Yes, then how many doors are self-closing? (If all, write all)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No _____
Are any internal (inside) doors self-closing? If Yes, then how many doors are self-closing? (If all, write all)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No _____
Are low-energy light bulbs and fluorescent tubes used in school? If Yes, then in how many rooms? (If all, write all)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No _____
Does each classroom have its own heating thermostat? If No, then how many rooms have a thermostat? (If none, write none)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No _____
Are lights and electrical items turned off when not in use?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Sometimes
Does the school have any of the following sources of renewable energy? Wind generator Solar water PV heating panels Wood fuel boiler Ground source heat pump	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Any further comments on energy: <i>The new building is very efficient we need to explore ways of improving main building</i>	

Figure 5-16: EcoSchools Energy Use Form

Children also spend time inquiring about issues in relation to their immediate environment and community and engage in practices that help them to respond to such needs and contribute to improvement of these environments. These activities are inquisitive and critical, experiential and usually take place through real life projects and clubs. For example in Case 1, Greening Local Area project

(Staff questionnaire, 1), students sought to

understand the energy use of their own community. Students undertook surveys of their homes and their parents on energy use, analysed them and developed small steps to decrease energy use with their parents.

In Cases 1, 2, 3 and 5, students also engage with inquiring about the behaviour of their school, by undertaking environmental review (see Figure 5-16). For example in Case 3, an energy team addresses energy use by the whole school, as they 'carry out regular surveys around classrooms to make sure we save power, keep classes warm etc.' (Staff questionnaire, 3). The energy team then provides the whole school with the feedback and proposes changes in its behaviour. In Case 5, children "looked at and monitored water usage" (Staff questionnaire, 5) and proposed a way to decrease the amount of water the school uses. "Can we get the smaller systems,

and a double presser, so we don't use as much water...so those were all their ideas which we did over the summer" (Head teacher, 5). In Case 5, children also took part in **investigating a solution** for a particular issue. As part of the water use issue, a Hippo cistern was investigated as a potential solution for reducing water use in the toilet. Once the students installed the first batch of the Hippo cisterns, they were measuring how much water they were saving and whether it was easy to use. This investigation led to purchasing and installing Hippo cistern on a school wide basis.

Students also have opportunity to be involved with on-going practices that generally have a positive impact on the school and the environment, without trying to solve a specific problem or an issue. The purpose of this involvement is engaging with improvement of the environment for the benefit of the whole school. This is mostly seen in Case 3, where all children in year 5/6 have an opportunity to look after the animals at the farm. *"So most of the animal care is done by the children in year 5 and 6, if they want to do it. What I do is I send a letter out and say in June your child will be in year 5 or 6 would they like to do the animals"* (TA interview, 3). Spending a whole week with the animals allows each child to develop knowledge on animal husbandry skills and respect for diversity and at the same time to take care of the resource that the whole school engages with. In addition, any child in years 5 and 6 who is interested can look after the bees and take care of the beehives. *"We train up year 5 children to help him [beekeeper] with the bee keeping and they've got a full suit as well"* (TA Interview, 3). Through this, students contribute to the biodiversity of their local environment and to school's self-sufficiency as they collect and sell honey.

5.6.2 Encouraging Student voice

The children are not only viewed as someone to be educated. The students' voice is an important element, which schools respond to in their move towards sustainable development as illustrated by the sections above. Children bring up issues in the classroom that teachers and the school may respond to. In Case 1, for example, discussion about a TV program on lamb, led to students seeing the lamb being born.

"I don't always watch TV but my children do, they were going on about it, so one day I got a text, Elsie is giving birth, and within 15 minutes we were up in the small holding and the children got there in time to see the lamb being born" (TA interview, 1). The children's voice also is incorporated into the decision making about change in behaviours of the school. For example, as previously discussed, as a result of the environmental review feedback the children provide the school with (Cases 1, 2, 3, 5). In addition, children are involved in making decisions about the school grounds and other projects the schools are involved in. This is more clearly seen in cases where the children are viewed as part of the school development towards ESD. *"We [children and I] talked about how and where our farm should be, what sort of gates we should have"* (Head teacher, 3). *"We got offered some apple trees, we got a school map, we did a little bit of orienteering, we went all around school grounds...and we looked... what sizes of the tree we want"* (TA Interview, 1).

While other schools do not mention this, for Case 3 the reasons to encourage, listen and respond to students' voices lies in the empowerment of the students to act and make decisions in relation to ESD, creating confident eco-warriors and responsible citizens. Also in Case 3, students not only have a voice within their immediate school circle, but also become ambassadors to those who visit the school, as well as when they go to participate in the external events in relation to the work on sustainable development. For example, children hosted head teachers from New Zealand, visiting to see what school does about its 'Green Agenda' (September Newsletters, 3a) and the eco team participated at the WWF Summit, meeting other children, conservationists, and the Prince of Wales (July Newsletter, 3a). Children therefore become a 'face of the school', voicing the school's ethos to other stakeholders.

5.6.3 Interest in Learning

One of the most important reasons as noted by Cases 1 and 3 for their students to be involved with the ESD agenda, is the increase in students' satisfaction with learning. *"And really apart from energy saving and save the planet stuff, it's all*

about curriculum enrichment, and its real life-learning, experiential learning, creative learning, which I think helps the children to learn” (Head teacher, 1). ESD therefore becomes a strategy to make learning more creative and interesting for the pupils, to increase satisfaction with the process.

5.6.4 Conclusion

There is a variety of reasons for involving children with the ESD agenda. For example, the school may seek to create an awareness of a particular issue in its students or it may choose to help children to understand a complex concept. Children may gain skills that would lead them to an experience of a particular value. These purposes recognise the development of a child separate to the development of the school. However, children may also be involved in learning simple behaviours associated with the school’s sustainable outcome. This purpose starts to bridge the relationship between the children and the school as well as highlighting impact that group action can have. Children may be involved with skills and practices that have a positive impact both on them as well as the community at large. Such work is viewed as having a deeper impact on the children and helps further develop values and attitudes towards the environment and others. **Also, some schools focus on empowering their children to be both critical thinkers about the issues and to have an ability to respond to the problem at hand.** These experiences are believed by some schools to enhance students’ learning and therefore are promoted by the schools. In addition, some schools recognise that students have a voice and opinion on the subject of ESD, which is of value to the schools. The schools therefore take time to encourage the voice of the students to come through. **Lastly, children become involved with an extracurricular agenda as they are sometimes viewed as the extension of the school’s image and someone who represent schools’ sustainable development values and ethos.**

It is clear that there are multiple reasons to involve children with an ESD agenda. However, evidence shows that only Case 3 has been seeking to try and achieve all the purposes mentioned above, whereas other cases aim for several, but not, all

purposes. Evidence also shows that some schools are **more aware** of the reasons to involve students, for example Cases 1 and 3, and therefore their actions are more planned out. Cases 2 and 5 show less reflection on their action.

5.7 Scope of student's involvement

While the research points to the fact that a school has many purposes to involving students, it also reveals that each school activates the involvement of its students at different levels, scope and with different consistency (see Figure 5-17).

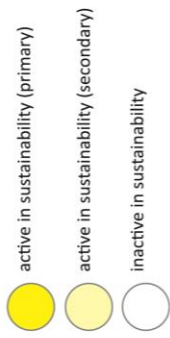
All schools engage their students in the formal curriculum where the scope of impact is potentially high as all children take part in it. Cases 1 and 3 introduce sustainable development issues across different subject areas and throughout all years in order for children to engage with the issues and topics for *“a curriculum that, every term, the children are studying something to do with sustainability or internationalism”* (Head teacher, 3). *“So within the children's curriculum there is an ESD strand that we try and build into every topic”* (TA interview, 1). In these schools **therefore all children are encouraged to be involved with sustainable development issues** through the curriculum. For Case 2, SD strongly features in the science curriculum and the curriculum constructed for older children. *“We will be putting things into the science curriculum as it comes through... our rolling program”* (Head teacher, 2). Therefore, all children are activated through the **science curriculum**, and older children are activated through the **later stages of their schooling**. In Case 5, there is little additional change to the ‘standard’ curriculum. *“I am not sure if it is planned for specifically or if it comes into areas”* (Staff questionnaire, 5). Therefore in Case 5, children are not actively involved with sustainable development in the curriculum. In Case 4 as in Case 5, children are not actively involved in the sustainable development agenda through the curriculum, with the exception of those who participate in the curriculum of a teacher who, in their work, includes some reflection on sustainable development issues. *“When looking at animals or parts of the world we address issues regarding our actions”*

(Staff questionnaire, 4).

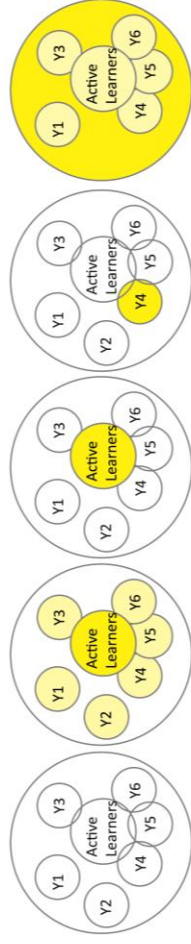
Children are also activated through an informal curriculum, where there is a potential for all children to be involved, in particular in relation to specific behaviours and values. **Unlike the formal curriculum where individual teacher's values and ideas could influence what is being taught, the informal curriculum relies more on the whole school ethos and culture.** In Cases 1, 2 and 3 where sustainable development issues have a presence in the whole school, even the dinner staff (Staff questionnaire, 1) emphasise no littering and recycling behaviours.

"It's just the consistency and the clarity of it, from time to time, repeating it over time... switch the lights off, but in the hurly burly of five year olds world they might not always remember" (Head teacher, 3). In Case 5 however, students are less engaged with such behaviours on a daily basis, as there is generally less involvement from the staff with ESD issues, instead these behaviours may be encouraged on a particular day, such as 'No Paper Day'. In Case 4 where there is no sustainable development ethos, school does not seek to engage children in such activities.

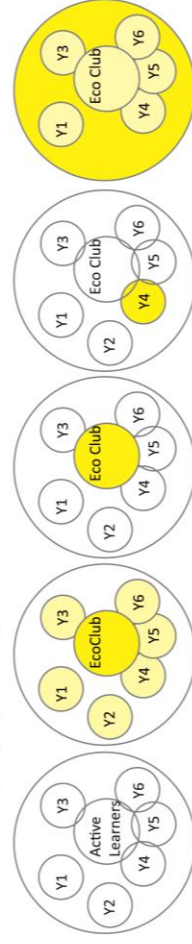
In addition, children are activated through projects that the schools are involved in. If the projects are on-going, then more children are able to participate, from year to year. If the projects are one-off, then only the children present during the time of the project will take part. Cases 1, 2 and 3 have several on-going projects that children take part in on a continuous basis, with Case 3 having the most number of on-going projects (see Appendix N). All cases have one-off projects where children had/have an opportunity to participate. Case 5 has few one-off projects that children take part in, as well as Case 4, which was involved in two projects 'Re-vitalisation of the broad green area' and 'Change for life dance project'.



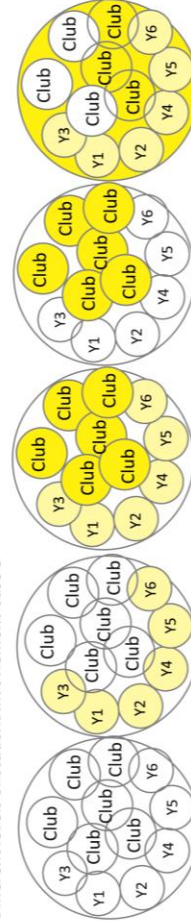
Different levels of student involvement Case 1



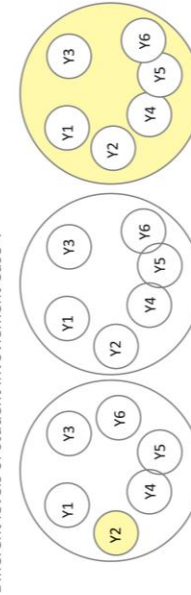
Different levels of student involvement Case 2



Different levels of student involvement Case 3



Different levels of student involvement Case 4



Different levels of student involvement Case 5

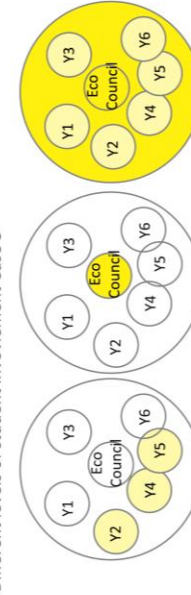


Figure 5-17: Scope Of Students' Involvement With ESD Topics/Values/Concepts

Children may also be involved at different stages of the projects. For example, they may be introduced at the design stage of the project, *“a soft play area, made out of*



Figure 5-18: Case 2 Musical Instruments Designed And Used By Children

recycled training shoes...and you can choose the colours online and that’s what the kids did”

(Head teacher, 1).

In Case 2, children took part in the **development and usage stages of the project** when they created instruments out of recycled materials (see Figure 5-18) and used them for the concerts for several years. In some projects children participate in **the initial idea** and then the **use of the outcome**, for example an eco build in Case 1 (see Figure 5-19).



Figure 5-19: Case 1 Students Designing Eco Build

The projects that are on-going and where children are involved in all stages of their development - design, development and use - is where the children are activated the most. However, such projects are rare. The project that is closest to having such inclusion may be the acquiring of water butts by the students in Case 3, where students initiate the idea, develop it through raising funds, and then use it in their gardens.

“The children came up with an idea we could have the rain butts, because in the summer when we do our garden we go through a lot of water ...so we said to the children, how can we do it, so that you use the water but we are not using the water that costs us money...So they came up with an idea perhaps we can have rain butts so we fund raise then to get the money, to get the rain butts” (TA Interview, 3).

In addition children may be engaged in the behaviours that are part of a particular school operation, such as a travel plan. In Cases 1, 2, and 3, children walk or ride bikes to school, which resonates with the travel plan of the school, and can also be done on a wide scale. To activate such participation schools provide students with bike sheds. *“We [increased] the number of bike racks so in the summer particularly, children will come on their bikes and leave their bikes here”* (Head teacher, 2). Another example, in Case 3, children participate on rotas taking care of animals out of school hours, maintaining the well-being of the school farm. In this case, children are provided with the key password for the gate, so that they can participate during the week as well as the weekends and holidays. *“So they are given a code to the gate, we have a padlock with a combination lock on, we change the combination quite regularly, so they know the combination, they can get in, do what they need to do, and when they go out with the parents they lock the gate so nobody else can get in”* (TA Interview, 3).

In addition, student’s involvement with ESD is further encouraged through particular structures that either exist or are created within the school, including student council, eco-warriors group or eco teams. These structures are created with a remit for students involved to be at the forefront of what the school does in relation to ESD. Sometimes, as in Case 2, **decisions about sustainability and other school decisions are made by the same group of students**, the school council. However, in other cases the school has created a new structure through which students could participate. Case 5 set up an eco-warriors, *“we set up, they call themselves eco-warriors, and there is a group of about six children”* (Head teacher, 5). In most cases these clubs have a limited amount of students, usually in years 5 and 6, with high activity in ESD. *“It’s just that they get to take the lead, and it’s a quite nice, year six responsibility so that works”* (Head teacher, 2). This means that the work that the school does and the impact of such work is usually placed with the select body of students. In Case 3, however, this is not the case. The eco team was created to increase participation of the students in sustainable development activities, which was done in such a way as to create as many sub teams to accommodate different ages and needs of the children, as well as the goals of the

school, increasing the impact (see Figure 5-17). *“I then formed an eco team, which was representative of the children and the parents and the staff, from foundation stage right through to year 6... eco team quickly became a group of 45-50 people... gardening group, animal group, farm group, travel plan group, and I found that boys latched on to being involved in the farm, the gardens, the woodland, and they like doing”* (Head teacher, 3). However, unlike in other teams where selected groups of students are exposed to a wide range of knowledge and activities relating to sustainable development, in the model of Case 3, students are working on a selected part of the topic, participating in making decisions or gaining knowledge in the particular area. **In this context, the process highlights its collective aspect, whereas in other cases the focus is on an individual.**

If in Cases 2, 3, and 5, the primary reason to establish a group is **to engage in sustainable development activities**, in Case 1, the group that has most interaction with ESD **has been established for a different purpose**. Active learners are a select group of special needs children whose learning is based around nature and the outdoors. *“My group is definitely more outside experiential, kinaesthetic learning, hands on”* (TA Interview, 1). In this case ESD is seen as an improvement strategy, yet it is this select group of students that are involved with ESD the most.

In two Cases (2 and 3) a very select group of children participate at the governing meetings. In this scenario, students present their ideas and requests about sustainable development issues and have a discussion with the governor’s board. Usually these are one or two **selected individuals**. However, this opportunity for students does not only activate children’s involvement with the subject but also creates ownership of the school. The issues and ESD also becomes more relevant to the whole school as governors usually make school-wide decisions. Unlike Case 2 where a selected few from the student council participate in the meeting, Case 3 tries to increase student’s participation by selecting new representatives for each meeting. *“Eco team will meet with the governors first item on the agenda, every governing body meeting”* (Head teacher, 3).

While all means to activate student’s participation may be considered as an active

way to involve students in the activities, one way, which is **more passive, are the school assemblies**. During this time, the children are made aware of ESD issues and schools' activities as they are presented with the information at the assembly. However, this is another way to have a wide impact, as the whole school takes part in the assemblies. Schools that engage with this are Cases 1, 2 and 3.

5.7.1 Conclusion

While evidence shows that all students have some involvement with ESD, it is also evident that not all schools engage students to the same amount. In most cases, children are widely engaged through the formal curriculum. Some students are engaged with the ESD agenda even in Case 4 where ESD is not part of the school agenda. Besides the formal curriculum, most of students' involvement with ESD is related to the ethos of the school and its interest in working towards ESD. Schools with strong a ESD ethos for example encourage their students on a daily basis to practice certain behaviours. This occurs through the participation of the staff who continuously remind students of particular behaviours, or through the school's provision of some vital resources, that allows children to engage with an activity. Whereas schools with a weaker ESD ethos, engage students only at select times. The range of children that are involved also relates to opportunities for children to get involved with projects and groups dedicated to ESD. **Cases 1, 3 and 5, encourage their students' participation at all levels of the projects, including their design and development, which deepens children's experience with ESD issues as well as with their school.** In Cases 2 and 4 however, children usually participate only in the usage stage of a particular project, limiting their decision making. Case studies also show that in most cases (1, 2, and 5), the school changes its structure to create a group of students who are immersed with ESD at a deeper level than the rest of the school. In these cases, a very select group of students is involved. However, as shown in Case 3 school structure can also be changed in such a way as to involve a wide selection of students (see Figure 5-17). This is partly to do with the school's strategy to **'empower and involve as many students as possible' where**

the focus is on collective learning and activities rather than the individual, which is prominent in other schools.

In most cases, children are engaged in a proactive way, however, there are also some passive techniques that schools practice to engage students, such as assembly.

5.8 Embedding ESD into the curriculum

In this section a closer look at how schools embed ESD into the curriculum (formal) is considered. The scope of the potential impact that ESD may have through the curriculum has already been discussed.

5.8.1 Consistency of ESD in the curriculum

ESD may be found in the curriculum of all cases. However, in **Cases 1, 2, and 3 ESD is a phenomenon of the whole school**, and there is an **on-going inclusion of ESD within the schools' curriculum**. On the other hand, in **Cases 4 and 5, sustainability is valued only by individual people**, it is not in the ethos of everyone and this is reflected in **the curriculum, where there are some sporadic evidences of the ESD**. This shows correlation between a supportive environment of the school and how much ESD is embedded in the curriculum. At the same time, there is **evidence of the impact that individual teachers may have on their children regardless of the school's support for ESD**.

However, while some schools (Cases 1, 2 and 3) might have a more consistent inclusion of ESD in relation to other cases (4 and 5), there are irregularities towards it within individual schools. For example, sustainable development is central to the curriculum of Case 1 (Ofsted, 1) as well as Case 3 and is incorporated in the curriculum of **each year group planning**. The frequency of sustainable development embedded in the curriculum however does vary from teacher to teacher, some teachers note that sustainable development activities occur once a week, whereas one teacher notes that sustainability is present within the curriculum every lesson (Staff questionnaire, 1). This is partly due to **how involved individual teachers are with the topics and ESD issues and their interest in it**. *"Some people do some things better than others, but that's what makes a good team... for me it is a massive passion, it is a way of life"* (TA interview, 3).

In addition, it is also about **the expectation from the school itself, the parameters**

set by the leadership team. In Cases 1 and 3, although there is an expectation that every teacher will plan for ESD every term, **teachers also maintain freedom** as to how much ESD will be brought into the curriculum. *“All the different year groups will have to plan for ESD, how they plan and what they do is pretty much up to them”* (Deputy head teacher, 1). *“So you have a part to play, no one undermines it, so one of the key parts of it is if you can make the curriculum reflect the work that you are doing on sustainability* (Head teacher, 3). In Case 2, **there is less expectation from the teachers to include ESD.** If in Cases 1 and 3, teachers have to plan for it, in Case 2 teachers might plan for it if they can bring it into their curriculum. *“They are happy to bring it in, particularly if they can draw it in into their curriculum, so if it is the science curriculum, or geography or PSHE, or whatever it is”* (Head teacher, 2).

Consistency of ESD in the curriculum also relates to the school’s overarching aim of the curriculum and the origin of its development. For example, in Case 1 the aim is for *“children to gain a growing understanding of different aspects of sustainability”* (Staff Questionnaire, 1). This aim of **‘growing understanding’** leads to the school planning a curriculum that allows for the consistent build-up of ESD throughout students’ years. The aim of Case 3 has been to **make the school’s curriculum more relevant to on-going work in the sustainable development resources** - farm, the gardens and the woodlands that the school has already been working on. *“To make our curriculum more relevant to our context and make it more individual to us, and take ownership of it”* (Head teacher, 3). The focus therefore has been to incorporate what the school does on an on-going basis into the curriculum, **leading to consistent incorporation of ESD into the different parts of the curriculum.** In Case 2 however, the aim of the school has been to *“raise awareness of the issues, was one of our key sort of starting points really”* (Head teacher, 2). In this case, where the aim is to **raise awareness**, the school does not have a specific plan for embedding ESD. Therefore there is less consistency on a daily basis, although the school does try to do something related to ESD twice a year. In Case 5, there is very little reflection as to what the aim of the ESD within the curriculum is. This might be a reason for a sporadic inclusion of ESD into the on-going curriculum by the school.

5.8.2 Embedding ESD into the curriculum strategies

There are different strategies that schools use to embed sustainable development into the curriculum. One of the strategies mentioned already is **to discuss a range of ESD issues during classroom time**. Research shows evidence of all schools doing this. Within Cases 2 and 5, such **issues are usually general and environmental**. *“Geography children learn about water and the world around them”* (Staff questionnaire, 2). In Cases 1 and 3 **issues are brought up on the local level, relevant to the school itself, but are also expanded to be discussed on the global scale**. *“Lessons are planned to incorporate the bigger picture to help the children to understand their local and global world”* (Staff questionnaire, 1). For example in Case 3, the school has links with schools in Uganda, therefore children in some of the year groups develop understanding about the issues in relation to Uganda. *“The years 3 and 4 do studies on Uganda, because we are linked to Uganda”* (Head teacher, 3). In addition, an sustainable development issue does not have to be at the forefront of the curriculum, **it may be secondary to the topic, yet teachers would take time to accentuate it in the classroom**. This is particularly evident with the staff in Case 1, *“checking to see if any issues of sustainability arise within any theme or topic, so these can be explored with the children”* (Staff questionnaire, 1).

One of the strategies that is seen as embedding ESD into the curriculum and widely used by Case 3 is bringing in the use of the school’s resources into the curriculum. *“And then use the outdoors to be the springboard...and that’s how you get it in into their learning”* (Head teacher, 3). The school has many resources - farm, woodlands, gardens, beehives - that become utilised by the whole school, which integrates the grounds and the curriculum, linking parts of the school that usually remain separate. This strategy is also seen to be aspired to by Case 5. *“So we are trying to get gardening on the curriculum”* (Head teacher, 5). The school’s garden has been included into the WW2 theme to enable discussion on how food was grown during the war.

Some schools (Cases 1, 2, 3 and 5) work with the notion of **thematic creative curriculum or parts of it** (Case 4), which is **cross curricular** and seeks to develop children's **creative thinking, inquiry skills, and considers a variety of learning styles**. In particular, these strategies focus on problem-solving activities and experiential learning. In this case, schools focus on creating experiences for the children to engage with a particular topic to make **learning more interesting both for children as well as staff**. *"Fun way to do stuff with children. Not sitting down and learning stuff, it's still learning all the other things, but its doing it"* (Head teacher, 5). In addition, such learning is considered to **be more effective as it moves away from lecture type of learning and engages children with an alternative type of learning**. *"You have happier children, you've got children who want to learn, and you've got children who are curious, you've got children who retain things because they had a hands-on experience"* (Head teacher, 1). A thematic curriculum is also an integrated approach that allows children **to experience a particular topic across all subject areas engaging with it on a deeper level**.

In Cases 2 and 4 this pedagogy is viewed to have benefits to the students, regardless of ESD. *"We've always felt that you get the best out of children if you are bringing whatever it is you are doing to life"* (Head teacher, 2). For Case 4, such pedagogy is a solution to the diverse number of students, with a high percentage of children not speaking English, for whom a traditional style of teaching through lectures is not adequate. Ofsted described an example of the school engaging students in reading through *"life-sized characters appear [in gn] all over the school and pupils [could] be seen taking on the mantle of the characters, bringing reading to life."* **In Cases 1, 3, and 5, these pedagogies have a direct link with ESD.** For Case 5, it is seen as a new way of teaching that has its roots in ESD, whereas for Cases 1 and 3, a thematic, creative curriculum is synonymous with ESD. **Not only do Cases 1 and 3 view thematic, creative curriculum to be beneficial to the development of the child, but also to the development of sustainable development in the whole school, as the 'doing' aspect is associated with making a 'practical impact' on the school.** These attitudes are reflected in the overall approach of the schools towards ESD.

In Case 4, the kinaesthetic, creative and experiential pedagogy is seen in itself to be associated with the ESD agenda. While children engage with it, they do not address any sustainable development issues and their learning stays within the boundaries of the classroom and a single teacher. In Cases 2 and 5, the curriculum has been expanded to include the exploration of sustainable development issues, beyond the experience of the individual student and towards the experience associated with the local environment and the school. In these projects, **real life inquiry** is a common element. For example, students went to the recycling plant, to find out about composting for their school. “[They] *wanted to go and find out...what you can and cannot compost*” (Head teacher, 5). In another example, students inquired about energy use in their local community. “[We] *looked at our local community and looked at the eco house, the renewables that Amy’s dad was doing*” (Head teacher, 2). **In Cases 1 and 3, such real life inquiry on sustainable development issues sometimes can also be coupled with real life changes in school that is associated with a sustainable development issue.** In this type of curriculum, teachers plan whilst being involved in the ongoing change of the school, making the **curriculum to be part of the whole school development.** Strategies may involve embedding a whole school project into the curriculum as has been done by Case1, “*The whole curriculum was taken over by the [eco] build which gave children real life learning experiences in literacy, numeracy, art, science and many other subject areas*” (New Building Information, 1). In addition, the **school may integrate management of the school with the curriculum** for example **specific operations that school is involved with.** For example children ‘*carry out regular surveys around classrooms*’, use the data in the classroom and feed it back to the school to have an impact on schools’ operations “*to make sure we save power, keep classes warm etc.*’ (Staff, questionnaire, 3).

5.8.3 Conclusion

Schools evidence some common ways to embed ESD into the curriculum. The most common strategy is to bring the issue into the classroom for a discussion. In some cases, issues are generally derive from Eco-Schools or other NGOs and programs.

However, in Cases 1 and 3 the issues brought up in the classroom relate to the work that the school is involved with, making the topics relevant to the school. In addition, in Cases 1 and 3 teachers make an effort to highlight sustainability even if it is not the primary subject of the lesson. This is not evidenced in the other cases. In Case 3 and partly in the other cases, sustainability is embedded in the curriculum by embedding school resources into the curriculum such as the garden, farm, outdoor classrooms, etc. This connects the school grounds and the formal curriculum, highlighting the importance of these resources and their management and besides making the curriculum more engaging, it makes it local and customised to the school.

All schools engage in a creative, thematic, experiential curriculum that engages students in a variety of learning styles, including developing inquiry skills. For Cases 2 and 4, this is associated directly with ESD and the schools feel that they do not need to do much extra. For the other cases, 1 and 3, this is not so. The schools feel that this pedagogy, when applied to issues of SD and to the local context, is the most valuable way to engage students with ESD particularly due to the concepts of 'doing' and 'inquiring'; however, without its application the pedagogy does not lead to ESD. Case 5 is different, as its engagement with experiential, thematic, creative curriculum relates to its engagement with ESD. Therefore the school draws the association between the two.

5.9 Projects

Another essential component to the school's improvement and development is through practical projects. For all cases, developing and engaging with projects **is seen as an essential approach towards ESD**. Projects feed into larger sustainable development objectives that the school defines for itself. Some projects will have a formal curriculum component, enriching the curriculum and making it experiential and real life learning or they can provide their students with an opportunity to develop outside of the immediate curriculum. Other projects may have no curriculum objectives but relate to the school's management strategy and may or

may not involve the participation of children. Projects can be undertaken by a small group of people or involve a whole school, local community and other partners. Projects may be short term or long term and may or may not have further implications. Therefore the objectives, the participation and impact of the projects vary (see Figure 5-21, See APPENDIX N). For all cases, developing and engaging with projects is seen as an essential approach towards ESD.

5.9.1 Acquisition of the resources



Figure 5-20: Case 3 Woodlands

Some projects focus on the acquisition of a particular local resource that will help schools to address one or several issues in relation to sustainable development that the school seeks to

achieve, as discussed in the sections above. For example, Case 1 worked on acquiring an eco build and cycle storage with an aim to lower carbon emissions of the whole school and community. Case 3 acquired woodlands (see Figure 5-20) and developed gardens with the aim to protect and preserve the natural environment and acquired a playground to support health and well-being of students. Case 4 invested in the conversion of the

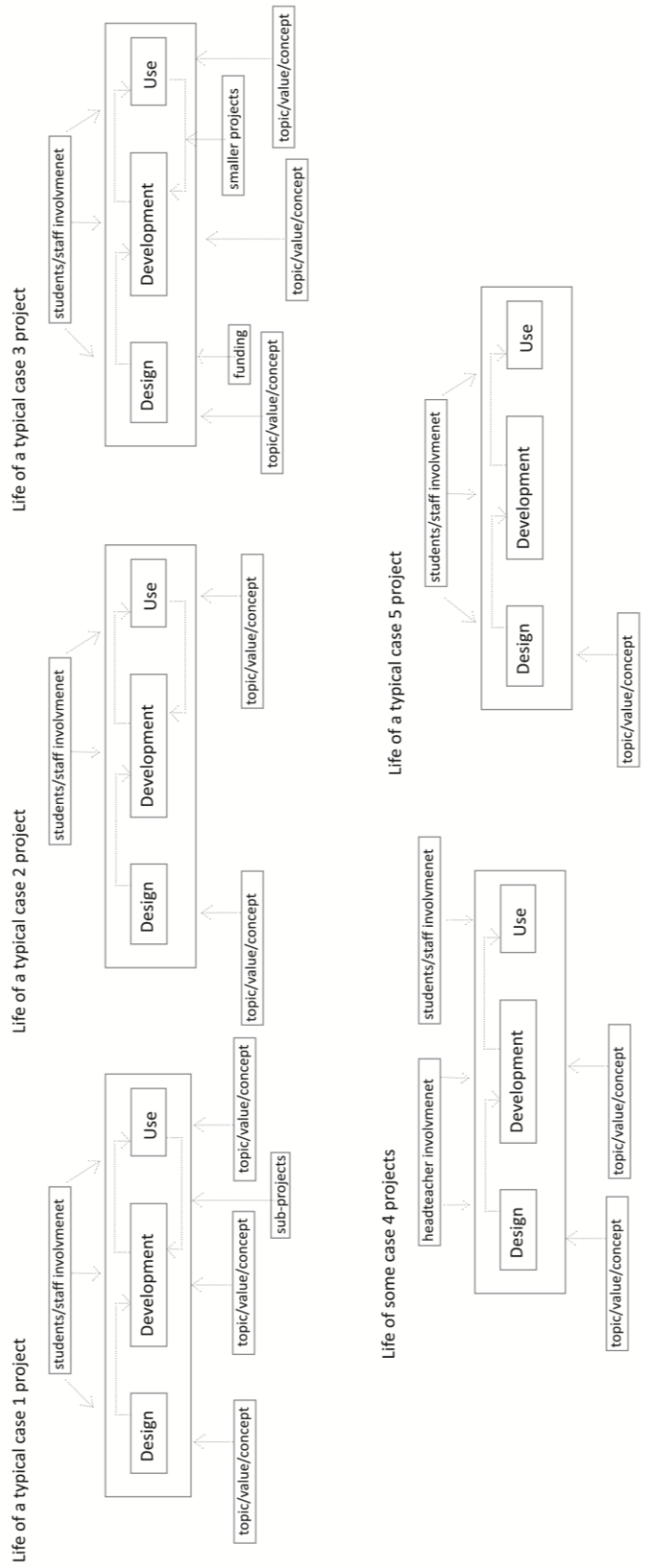


Figure 5-21: Life of a typical project

green patch into a multi-game use area, to improve the well-being of the students as well as its local community. It also sought to expand parts of the school to create additional space. Case 5 has acquired toilets that use light and water sensors (see Figure 5-22) and double presser to save water, energy and money. Such resources are usually permanent and their immediate focus is on developing the grounds of the school.



Figure 5-22: Case 5 Sensor toilets Their impact and ability to address issues may be embedded within the design of the resource itself, its features and materials (for example, eco build, the sensors). However, it is also partly due to its use by the school and community. Some resources are used more passively, such as cycle storage, game use area, and the toilets. In other cases, there is a more active involvement with a resource, for example, it may be used for educational purposes by the staff, or children may be involved in its management (as for example of the woodlands and eco build), or parts of the resource may contribute to the school's operation.

For example, in Case 3, the harvest from the garden will go into the kitchen and into the children's school dinners. In addition, the use of some resources provides the school with a financial return, as for example with the eco build or sensor lights that save the school money. Therefore, although these large projects will be developed only once, and may be considered to be one-off projects, they are developed for a long-term impact that include the well-being of the children and nearby community, as well as an environmental impact and an impact on the school's finances. The impact of these resources on the individuals is affected by whether the school actively involves them with the resources or not. Therefore projects such as the eco build, the woodlands and the gardens, are resources that have a greater impact on the individuals as there is an active, ongoing involvement of the peoples in the school and community with these resources beyond their immediate use.

Some resources that Case 3 has, have been in its possession for the last 40 years. The longevity of these resources is an example of their ongoing impact on the school and school's ability to manage and use these resources in the manner as



Figure 5-23: Case 3 School's Beehives That Have Been Around Since the 1970s

described above. For example, the school has owned beehives (see Figure 5-23) since the 1970s. The bees are maintained by the students, and the honey is sold to

the community. Another project that has been ongoing in the school

since the 1970s is a farm. The main purpose of the farm is not environmental but educational, both formally and informally, with an emphasis on the school's value of care. It is another whole school project, as the school receives a lot of support in maintaining the farm from the staff, students, parents, and qualified individuals.

In addition to the aim and the impact of these projects, the design/development process of the resource may also consider sustainable development issues, environmental or social issues. For example, in the design stages of the playground by Case 1, the use of a particular material, recycled training shoes, was considered by the school. During construction of the new eco build, waste reduction strategies were considered, such as "reducing construction waste arising through efficient design and onsite reuse of materials" (New Building Information, 1). As a result 86% of project's waste was recycled (New Building Information, 1). Case 5 constructed a sheltered area for the parents, to encourage them to walk to school, and in the process of construction considered renewable materials, prefabricated construction, as well as "locally sourced labour" (School document, 5). Other concepts, such as utilising a resource, may be embedded in the process as well. For example, in Case 3 the grounds used for the building of a new classroom were then used to construct the allotments. *"The contractors when they were building it...they used it as a road...so consequently when they left...the ground was so mashed up, we couldn't use it for the animals to graze, so we decided to make this part an*

allotment” (TA interview, 3). The acquisition process may involve a concept that has educational purpose for the students. For example, in Case 3 children participated in the acquisition process as they raised over £40,000 in three years to support the new playground. This introduced them to the **notion of social conscience** as the children worked towards a resource that they themselves may never use.

5.9.2 Projects to support larger resources

Some schools develop smaller scale projects that are created around large resources to either support their use or to find an additional use for them. This usually happens as a result of the school’s reflection on its larger projects, in either development or use stages (see Figure 5-21, Section 5.9). For example, the school may reflect on whether changes need to occur to improve the performance and management of their resource, or whether the resource may have an additional use. In Case 3, a poly tunnel has been erected to grow plants for the gardens and the woodlands and water butts have been bought in to save water to use in the gardens.



Figure 5-24: Case 3 Poly Tunnel

A fence building project took place in Case 3 as a reflection on the use of the farm in light of new legislation. *“They send us updates to legislation, obviously in the last couple of years they have been cautious about e-coli ...that is why we have that new fencing in the back”* (TA interview, 1). Case 1 has been able to develop other small scale projects from their gardens, both educational as well as financial. These include a fresh fruit/vegetable stall to sell leftover produce to the community (TA interview, 1), cooking chutneys with year 5 students (Deputy head teacher, 1), a restaurant project for the Nurture group (TA interview, 1), growing and cooking demonstrations for parents (Deputy Head teacher, 1). The projects developed around large resources, therefore show the schools’ reflection and ongoing evaluation of their work, and the ability to respond to external constraints to continue or evolve the work that is being carried out. As with the larger projects, this is an opportunity for the school to embed a particular sustainable development value or seek to solve an sustainable development issue. It also provides opportunities for schools to utilise resources that inherently are seen as being sustainable and encourage participation of its stakeholders.

5.9.3 Investigative Projects

Investigative projects that schools engage in usually aim to create awareness on an issue through its investigation. Usually, these projects have an educational purpose and become part of the curriculum. In addition, they are usually short term, relying on the context and availability of the resources and partners, they may reoccur, or be a one-off. For example, in Case 2 the children investigated the issues of energy use in their local community by visiting one of the children’s homes. *“And we all jumbled through his garden, and looked, its showing the children that this eco house is brilliant”* (Head teacher, 2). In addition, the school has established a relationship with the local zoo that the children visit every year to investigate the issue of endangered species. Case 5 led an inquiry-based project into waste and its own, school’s behaviour in relation to waste. The local council first introduced students and staff to the issue of waste, and the school embarked on self-inquiry leading to the Waste Free Packed Lunch Box Competition, *“Within two weeks they came back*

and there was hardly anything, just tucked away, kids were coming in with Tupperware without wrapping a sandwich” (Head teacher, 3). Another inquiry-based project was led by students on the issue of saving water, where a hippo cistern was looked at as a solution to the problem.

5.9.4 Behaviour Enabling /Awareness projects

The aim of these projects is not necessarily about investigation, but rather creating awareness of a particular issue as well as promoting a behaviour change in relation to sustainable development. These are usually short-term projects, but are on-going, reoccurring annually, and they try to reach out beyond the immediate school and into the local community. For example, Case 1 is involved in such annual projects as Low Carbon Day, Earth Day, Save Money Save Energy Campaign. These are viewed not only as a way to bring awareness about energy use and carbon, or involvement in behaviours to minimise energy use by the whole school and parents, but also as a way to keep the profile of the issues high in the school and the local community. In Case 3, these projects take shape as competitions, both internal and external. For example, internally the school runs competitions for the best gardens. Other examples of competitions the school participates in are Omelette and Sausage competitions, where students need to cook with the produce from their own school. These projects do not only provide awareness about issues of food and local produce, but also create awareness and a high profile about the school’s own activities within this domain. The school’s winning of these competitions helps to promote such activities within the school itself and to its local community.

The aim of such a project in Case 2 is to bring awareness to already on-going operations in the school and to encourage individuals to expand its scope. For example, along with the general encouragement of lift sharing and walking to school, there is a separate ‘walking to school week’ to highlight this behaviour. Also the school has an on-going operation of recycling, but in addition, has established specific days for ‘recycling of cloths’ that depends on family participation. Case 5 encouraged its school as well as the whole community to care for the environment

and bring awareness about waste and litter through the Big Tidy Up project, cleaning around the school area (County council website, 5). A short one-day project was carried out where the whole school sought not to use any paper for a day. This project goes beyond creating an awareness of paper use in the school or promoting a specific behaviour, its rigid constraints, could potentially provide grounds for creative solutions.

5.9.5 Educative Community Projects

These projects have an educative purpose where the schools seek to distribute their knowledge both to the immediate school stakeholders and beyond. These projects link with the main issues that the schools seek to achieve. Cases 1, 2 and 3 focus on their knowledge on ESD, whereas Case 4 focuses on its issue of diversity and multi-culturalism. Projects range from direct transfer of knowledge, or more the passive way of educating, or are expanded to provide opportunities for experiential learning. For example, in the 'Greening Bowbridge Campaign', Case 1 sought to educate in a passive way the local community about energy use. *"Trying to explain to the parents, the benefits of being more sustainable, on very simplistic terms turning off the electricity"* (Deputy Head teacher, 1). Other projects are more active, looking and developing *"with parents....healthy menus"* (Deputy head teacher, 1). Eco Week is a Case 2 project where the school opens its doors for others to come and see the work the school has done, it also provides an opportunity for people to engage in some eco activities. Case 4 involves bringing the local community to the schools' grounds for classes in English. The classes are also supplemented with multi-cultural activities that involve students, parents and other stakeholders in the community (Staff Questionnaire, 4 and School online article, 4). The project is twofold, it seeks to promote multi-culturalism as well as local integration.

In some cases, the projects look at not only the sharing of knowledge but also their resources. For example, Case 3 established smaller projects of group visits, where a particular group **utilises a school resource**, for example using woodlands to do

some activity. Case 4 planned to bring in the community to utilise their newly developed playground.

A third type of educative community project looks at a school creating partnerships and networks, where learning is multi-directional. Case 3 leads networking events involving up to 30 school representatives, where the focus is on practical action, helping others to formulate an action plan. In these events, the school is a host as well as one of the participants in the learning process, gaining experience from others.

5.9.6 Prototype projects

Prototype projects are of an investigative nature, to explore a new ESD solution and the limits of the school's capabilities. Some do not succeed or become terminated for a particular reason. For example, Case 1 investigated "*setting up a walking bus scheme*", which failed due to a lack of volunteers (Travel Plan, 1). Case 2 investigated a possibility of a wind turbine which proved to be unrealistic. Case 3 bid for funding to support an installation of solar panels but the bid was unsuccessful. In other cases, these projects led to changes within the school. For example, Case 3 tried a set of energy saving ideas for a semester in partnership with the local council. This prototype project was successful and led to changes in the school's operations (see Case 3 APPENDIX N). Prototype projects are vital to a school's on-going improvement process. Whether successful or unsuccessful these projects are part of a school's learning process that helps schools to test new directions and ideas and possibly to evolve.

5.9.7 Projects: Conclusion

Evidence shows that projects are an essential way for the schools to engage with ESD. Schools engage with different types of projects that have different foci and could be categorised as: acquiring a resource, initiatives to support larger resources, investigative projects, behaviour enabling/awareness raising, educating community, prototypes. What makes these projects ESD is that they focus on specific

sustainable development issues that are relevant to the school.

Each project also has a life span: design, development and its use. In these projects there is a lot of space to include sustainable issues, not only within the larger impact of the project, but within each of the stages and therefore to have an on-going ESD impact. If the schools reflect throughout the project, then they may also be involved in some iteration processes developing the project further and deeper. In addition, children and other stakeholders may participate at any stage of the project.

Involving children and others creates an educational agenda for these projects and the wider their participation, the greater the educational impact.

Possible considerations (inputs) that have been used in the projects.

As shown in Figure 5-21, Section 5.9 only Cases 1 and 3 have been shown to develop their projects in depth. The participation of children and stakeholders happens across all stages in these cases, ESD issues are embedded across all stages of the projects, and these schools engage with projects reflection and iteration processes. Other cases are less involved with their projects. For example, Case 2 does not involve its students and staff at the design stages of its projects, Case 5 usually does not reflect on its projects at any stage, and Case 4 does not involve its students and staff at any stage of project development but only in project use. These cases therefore limit the impact of their projects, and their opportunity to change it.

5.10 Projects and their role in moving towards ESD

5.10.1 Projects as entry point into ESD

All cases view projects as **an entry point into ESD whilst using** different strategies.

For example, **Case 1 became involved with a large project**, acquisition of an eco build, to start off its work in ESD. Such strategy is seen to bring attention to the sustainable development issues and the aim of the school to become sustainable. Involvement of the whole school throughout the process brought an enthusiasm for the aim from within. The tangible outcome of the project is a symbol for others to

recognise the values and goals of the school. *“The main thing we are concentrating on was our new eco building, because ...it was a way that we could tangibly show that we were ...working towards sustainability... that’s really where most of my, and those of other members of staff, time went”* (Head teacher, 1). Case 2, engaged in many small projects to generate enthusiasm within the school and to create an image of a school that is interested in sustainability. By doing this, the school established itself with external bodies as the school that *“does not pay lip service to sustainability”* (Head teacher, 2). This led to the development of links with the council and numerous NGOs with the potential for future projects. In Case 3, the strategy is not about entering ESD, as the school has already been doing some work within the area. Instead the school focused on making the work in ESD a central part of what it does. It did so by consolidating its work, integrating the school’s ongoing work with the curriculum. This strategy was under the umbrella of seeking to achieve an award, the Green Flag. Such consolidation of work, and application for the award, required the participation of the whole school and community, and therefore created enthusiasm and confidence in the work the school does. The school also received the award which established its reputation with the external bodies as a sustainable school. *“So we all worked really hard and beavered away for a year and then the judges came and awarded us our first green flag”* (Head teacher, 3). All three schools showcase the **push moments** in their strategies, the time of intense collaborative work in a particular direction with the aim to establish themselves as a sustainable school.

Case 5 entered ESD through a small project, inviting the local council and acquiring several recycling bins. Whilst this led the school to establish a successful waste management operation, it did not involve the whole school in the process and therefore did not create enthusiasm, nor did it establish Case 5 as a sustainable school. However, it brought some knowledge about the issue, and later projects were developed around it. Case 4 supports the notion of entering ESD through development of the project as the school considers a set of projects for the future, including *“plans for new garden”*, *“solar energy for school”* and involving students in an eco club (Staff Questionnaire, 4).

5.10.2 Projects and their on-going activity

Projects are not only a way to initiate the work on ESD but also to continue it. This leads schools to engage with different projects, at different times and for diverse periods of time (see Figure 5-25). **Some schools take time to establish and run on a template while others don't.**

For example, Cases 1 and 3 see establishing a template for their projects as an ESD development strategy. *"Now 15 years on, it runs to a template, and they keep tinkering with the template and it keeps evolving"* (Head teacher, 3). Both cases established on-going projects that are embedded in the school and the whole school is engaged with them on a continuous basis, including through the curriculum. Short-term projects help the schools to keep the issues in high profile, whereas large, one-off projects help the schools to expand the schools' work. Schools therefore have a continuous ESD action as well as small or large bursts of ESD activity that usually involves the whole school and community and brings about change (see Figure 5-25). The development of such templates helps the school to manage their work and expand it whilst building upon what already exists. Case 3 in particular, amongst other projects, develops work that not only focuses on an educational aspect or solving an SD issue, but also financial. Such projects help the school to become a sustainable, self-sufficient microcosm.

- P 12 project number
- one-off long term substantial project, contributes to school's wide involvement with ESD
- one-off long term substantial project, not as crucial in the life of the school
- short repeating projects
- continuously on-going project, can integrate many elements in the school
- project in a planning phase

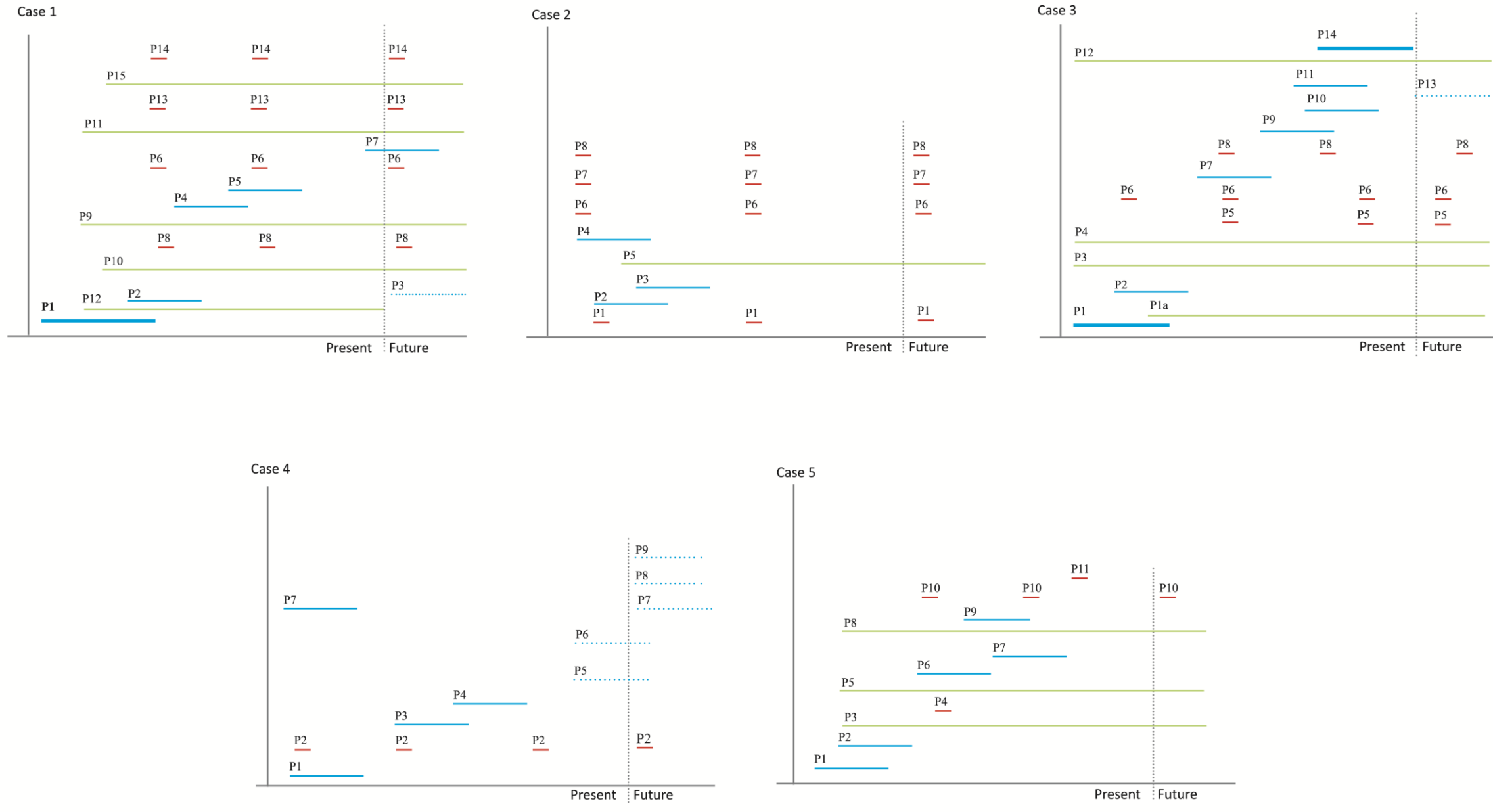


Figure 5-25: Projects' Timelines

Case 2 practices a different strategy. The pattern of its involvement with ESD is described as the '*dip in and out*' strategy. Whilst it has few on-going projects, the school usually gets involved with projects as they come along. This is due to its established eco-school reputation, Case 2 gets approached by the stakeholders proposing ESD projects. Such strategy leads the school to alternate between high and low activity rate, depending on projects. In addition, this also means the work that the school does rarely builds upon itself and develops in a particular direction.

Case 5 has not had time to develop its strategy in order to articulate it, as it has only recently begun its work in ESD. However, some activity may suggest that it is following few strategies of Cases 1 and 2. For example, although the school did not experience a 'push moment' it has been slowly engaging in multiple projects and gaining knowledge on the subject of waste management. In addition, it also is developing a garden as a project that school can get involved in an on-going basis.

Neither Case 2 nor Case 5 was planning new projects for the near future. This means that the activity of the schools will be at its minimum with a focus on the on-going work and schools will not be creating new opportunities to get involved with ESD.

On the other hand, Case 4 whilst not having many projects that it related to ESD, was in the process of planning multiple projects to embark on. The activity level of Case 4 therefore will be rising in the near future.

5.10.3 Projects as a learning process

By developing ESD projects, schools become involved in a learning process that could impact a few people or the whole school and its community. Through projects, schools may not only gain knowledge (whether transmitted or experiential) on an individual level but also on the organisational level. Such learning is on-going, as schools encounter new projects and challenges, for

example, prototyping projects whether successful or unsuccessful or developing a new organisational behaviour such as recycling. Some of this learning is evidenced when the school is able to apply its new acquired knowledge in a similar context. For example, Case 1, *“we’ve learned from this building how to refurbish that one”* (Head teacher, 1). Case 3 gained knowledge on how to protect and manage the woodlands. This knowledge **was further applied** by the school in a similar community project, where children lobbied against local woodland destruction.

5.10.4 Conclusion

Evidence shows that projects are an essential element to working towards ESD and their role is diverse. Projects allow schools to enter an ESD agenda, develop a particular type of issue and knowledge, to keep the ESD profile high, to engage the whole school in a learning process on an organisational level. Some schools (Cases 1,2 and 3) are aware of these effects that projects have on their schools and therefore are able to engage with them in a strategic way. Other schools (Cases 4 and 5) are less aware of the impact that projects have on their school, and therefore their engagement with them is less strategic and more sporadic.

5.11 Partnerships

In most of the projects the schools are collaborating with other partners, which shows that developing and establishing partnerships is one of the main approaches exhibited in relation to sustainable development. Partners are considered from all sectors: business, social, and political, public services, and constitute global organizations such as WWF, to more local organizations and agencies, universities, businesses, local community as well as immediate school stakeholders (see Appendix N).

Partners may be instrumental in sharing their knowledge, for example to explore larger themes and definitions of sustainable development, *“we looked at WWF, it was 10 or 12 different behaviours for sustainability”* (Deputy head teacher, 1). *“This looking at the sustainable schools pack, it is something we need to look at our long-term planning...This is new stuff that came...it is from the previous government”* (Head teacher, 2). Partners may be instrumental by updating schools with the governmental regulations, how to change practices if needed while continuing the work. *“The latest set of regulations concerning school farms and good hygiene insists that all young people working on animal duty to wear overalls which have to be washed at 60°C”* (September Newsletter, 3a)

Some partnerships are based on the **co-creation of resources or experiences**. In most cases, an external partner has knowledge, expertise and resources to support the school to achieve its specific aim or project. By working with these partners the school gets a lot of help with its projects, but is also involved in helping these organisations achieve their overarching goal such as community outreach.

For example, Case 1 partnered with an energy agency that helped the school to run a Save Energy Save Money campaign by providing the school with workshops and demonstrations on the topic.

Some partnerships are based on the sharing of services or resources. This type of

partnership helps the schools to keep the overall costs down. *“We also got a parent who is a veterinary nurse...she showed me how to inject so I can do all that now”* (TA interview, 3). In Case 2, parents send seedlings to school for them to be grown in the garden.

5.11.1 Building relationships through partnerships

Different relationships are explored through partnerships that have their own benefit to the school or to its partners (see Figure 5-26).

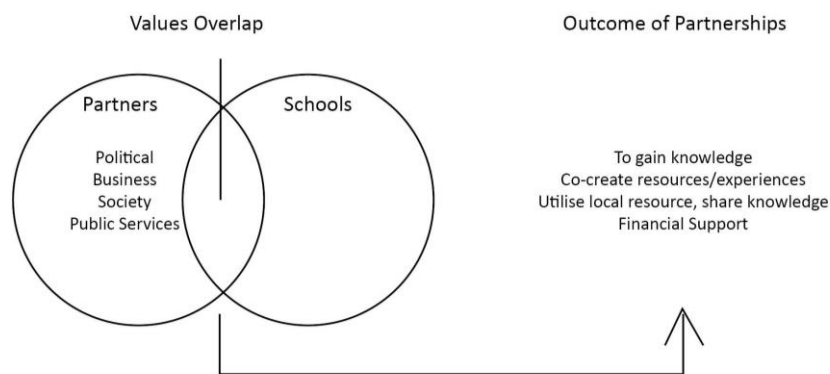


Figure 5-26: Partnerships' Congruent Values And Sustainability Outcomes

Some projects that schools engage with are complex and therefore the school might partner with multiple sectors/organizations. For example, during the design stages of the eco build, a creative learning partnership was created between the school, the university, and the architects to capture ideas of staff and students and to feed it back into the larger design of the building (New building information, 1). On site, partnerships with several waste management systems were incorporated to get close to carbon neutral construction (New Building Case Study, 1). And several funding bodies including local council were involved in helping the school to make the project a reality.

The partnership explored above is based on the relationship of the school being provided with resources by its partners. A different type of relationship is built on sharing resources. This type of partnership is favoured by Case 4 and is expanded

where the exchange of services occurs both ways. A school provides architects with space to have an office, while architects provide the school with free expertise on its refurbishment projects.

Another type of partnership which also favours a win-win situation is the one where the school changes its relationship with the stakeholders to one of a business relationship. In a Case 1 project, based on 'community investment model', the local community will be funding the school to have photovoltaic panels to produce electricity by buying its shares. The community gets a return on their investment when surplus electricity is sold by the school to the national grid (School case study, 1). In this case, the community would help the school with its aim of carbon neutrality by being an investor, a business partner. In Case 4, the project is being planned with a partnership between a lighting company and the school. This partnership is based on a business model: the school takes out a 'green loan' with the company, the company installs sensor lighting in school, the school saves money using the system which it pays back to the company.

Another partnership is based on a relationship where the school provides services to others. For example Eco Week (Case, 2), Eco Hub (Case, 3), Multicultural Saturday School (Case, 4), are projects where schools are involved in reaching out to other schools or local communities, opening its doors and sharing its knowledge and other resources. While there is some benefit to the schools in doing this, the main focus is on helping others to develop their sustainability practice or other values.

5.11.2 Partners and ESD values

In most cases school partners exhibit values that relate to sustainable development and coincide with the values of the school (see Figure 5-26). When the values are different, the school might take time to change them (see Figure 5-27), or if the values of sustainable development do not exist the school might take time to

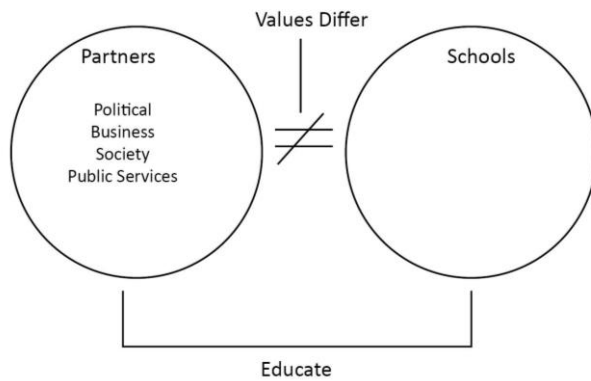


Figure 5-27: Partnerships Value Differences/Overcoming Strategy

educate its potential partners.

This usually occurs when the school is being proactive in achieving a particular goal.

Case 3 take time to educate their governors about sustainability issues to get their support in embedding sustainability into the school. Case 1 took its governors *“for a special governor’s meeting to Hockton housing project...*

which is a sustainable community” (Head teacher, 1). Case 1 also had to educate its community on issues of energy and carbon neutrality in order to develop a business partnership with them in the Photovoltaic project. In some instances, the school fails to change the values of the partner. In this case, the school may take an initiative to change the partner or circumstances that led to the disagreement. *“Other things they wanted to cut, they wanted to have a gas boiler rather than a pellet boiler, so it was quite a battle to keep the eco-credentials, and it only happened because we managed to lever in more money”* (Head teacher, 1).

5.11.3 Partnerships: conclusion

As schools work with limited resources, developing partnerships is a valuable strategy that helps schools to expand these resources including human resources, knowledge, time, and funding in order to achieve its ESD aims. Although some schools do not recognise the importance of partnerships (Case 5), it is clear that partnerships are valuable. Schools establish partnerships based on different relationship models, from a partnership where the school is being provided for by the other party, where the two are exchanging services and therefore have more of a business relationship, to one where the school itself opens its doors and provides for others. Based on the size of the project, schools may be engaged in a complex relationship with multiple stakeholders at the same time.

It is important for schools to have partners that are working towards similar goal and barriers arise if their knowledge or values contradict that of the project. Some schools find themselves in an environment where the majority of stakeholders share sustainable development values and where the school is passive in constructing its projects, but rather engages with the ones that are being provided (Case 2). Other schools, that have a **sustainable development vision and are proactive** in working towards it but whose stakeholders differ in their values and understanding, are more likely to experience such a barrier. In this case, the school might take responsibility to educate their partners on sustainable development values and benefits, in order to continue the work.

5.12 Involvement and activation of staff

One of the important stakeholders that schools rely on in order to move towards ESD **are the staff**. However, while in some schools (Cases 1, 2 and 3) staff have a lot of knowledge of ESD and active involvement within the school, in Case 5 it happens less frequently, and in Case 4 it is at its minimum. The schools that have high involvement from their staff also continuously activate their staffs' involvement, whereas in other schools this happens less frequently. How schools activate their staff and in what numbers also varies.

For example, in Cases 1, 2 and 3 most of the staff express enthusiasm for ESD and are activated on a **personal level**. These schools encourage their staff to participate and help in the on-going ESD projects. Whether it is "*receiv[ing] an award for the school*" (Staff questionnaire, 1), supporting a particular school club, "*I assist at cooking club*" (Staff questionnaire, 3), or just general support. In addition these cases try and tap into the staff's enthusiasm and skills and encourage them to take supporting, participant, or leadership roles in a particular project. For example, schools identified teachers with gardening expertise and encourage them to do it in the school. "*We have some fantastic gardeners, and amazing experience in this school*" (TA Interview, 1). Sometimes this link carries on, even when the teacher has

retired. *“We have a teacher who used to be here, in fact he retired...and he comes down and he does the bee keeping for us”* (TA interview, 3).

In addition to tapping into existing knowledge and skills, Cases 1 and 3 seek to try and increase enthusiasm and confidence in teachers on the subject by providing them with opportunities to learn and making it part of their continuing professional development (CPD). In this case, schools expand a personal enthusiasm and knowledge and bridge it with the professional interest. *“Most of the teachers did an ESD course online... with WWF ...so that helped to raise it as an issue and helped them to find the sources of information”* (Head teacher, 1). *“I was the one who got a CEVAS Level 1 and CEVAS Level 2 for the whole school, to say that we got trained personnel and we are sustainable”* (TA interview, 3).

In all three cases (1,2 and 3), schools further activate their teachers on a professional level by making ESD part of the curriculum planning. However, Case 2 is less proactive in this process, as they only ‘encourage’ teachers to do so. Cases 1 and 3 have a more rigorous approach, and it is expected of most teachers to include ESD into the agenda.

Another **professional activation for teachers** occurs through **performance management**. Few individuals within Cases 1, 2 and 3 will have ESD as part of their performance management. These may be teachers, TAs, a Deputy Head teacher or other members of staff, who have a leadership role in ESD within a school. *“So not every teacher or TA will have a sustainability target...But then there are other people for example, Hugh, and Katie ...who do a lot with eco, myself, all of my targets are to do with eco”* (TA interview, 3).

To involve staff with an ESD agenda, some **organisational changes need to take place**. For example, in the school structure, creating and developing positions for ESD leaders or in the organisational processes, **such as hiring**. Some schools place personal interest and values as **part of the hiring process**. This is particularly true for Cases 2 and 3. *“So you are not going to get a job here unless you espouse those*

values and actually do something" (Head teacher, 3). Both of these changes are opportunities to activate staff on both professional and personal levels and therefore increase ESD work in the school.

In all three cases there are examples of staff being activated both on personal and professional levels and across most of the school. In Cases 4 and 5 it has not been so. Both Cases 4 and 5 showcase staff to have some level of personal enthusiasm about ESD, knowledge and skills, for example being a Forest School Trained teacher (Staff Questionnaire, 4). And although they use some activation strategies, **most of the resources have been placed to support a single individual**. For example in Case 5, the school tapped into the enthusiasm of that individual, responded to their personal interest, activated them on a professional level by establishing a role and made it part of their performance management. *"Steff is one who was really keen on eco... Steff's target is about Eco-Schools... Steff now does it, I don't really get involved anymore"* (Head teacher, 5). However, by withdrawing its support from other individuals regardless of them having interest and expertise, the school limits its move towards ESD. In Case 4, ESD is at the early development stages. *"It is currently becoming an area for development so I am yet to find out..."* (Staff questionnaire, 4). However, just as in Case 5, the school focuses on supporting one individual, the sustainability co-ordinator, rather than trying to engage the whole school.

5.12.1 Conclusion

A school may increase levels of ESD activity, if it seeks to support and encourage the involvement of its staff. Schools that have the greatest involvement of the staff use various strategies to activate their staff both on **personal and professional levels and on a wide, whole school scale**. Cases 1, 2 and 3 use a mix of strategies to activate their staff at different levels, providing opportunities for wide involvement. This requires changes in the school's structures, for example establishing new leadership roles or changing the hiring process. Case 2, unlike Cases 1 and 3, uses a less proactive approach in activating its staff, it prefers to activate its staff on

personal rather than professional levels, using strategies of encouragement rather than more formalised approaches. Cases 4 and 5 also use activation strategies within their school to start activating ESD. However, although these cases have individuals who could be activated on a wide scale, they choose one individual, activate them with **less intensity**, which leads to less engagement with ESD within the school.

5.13 Operations

In addition to projects and curriculum, schools engage with developing policies for organisational operations, some of which consider sustainable development issues. Most schools develop Travel Plans and Waste Management Plans that have some consideration of sustainable development.

The most developed travel plans are in Cases 1, 4, and 5. The focus of these plans is somewhat different which also leads to different school operations. The plans of Cases 1 and 5 focus on the benefits walking and cycling can bring to the local community rather than energy efficiency. As a result, schools develop projects and resources that **try to enable such behaviours as well as bring awareness** about the benefits of walking and cycling to school's stakeholders. Case 4 **focuses on organisational resource efficiency**, which leads the school to invest in its resources, such as a shared mini bus, and less on developing awareness and knowledge of its stakeholders.

Cases 1, 2, 3 and 5 have well-developed waste management plans that also differ in their focus, based on the school's vision for ESD and its local context. Case 1 seeks to manage its waste at all aspects of its work, from recycling a wide selection of materials, "*paper, card, aluminium cans, clothing, mobile telephones and printer cartridges*" (School Prospectus, 1) to including the value in any construction process it is involved in. **Other cases are more selective.** Case 2 focuses on recycling, and has expanded its scope to include different materials including clothes. To do so, the **school considered its local context and the capacities of its local community** to

participate in the operation. Case 3 also considered its local context when establishing its waste management plan that considers animal and garden waste as an important component of the school with the farm and allotments. Case 5 also recycles a selection of materials, *“recycling policy- particularly of ICJ equipment”* (Staff questionnaire, 5). The school took this behaviour further when it focused on minimising the use of material and not just recycling. This led to a change in how students’ parents were approached, from paper newsletters to electronic newsletters.

Cases 1 and 3 have also considered the procurement policy. This is in light of aiming for the school to become an ‘ethical consumer’. Schools began with their food purchasing *“to source locally where possible, especially local and organic food”* (Staff questionnaire, 1). However, they also seek to expand their scope, by looking at any purchasing in light of the ethical policy. For example, Case 1 sought to establish a regional supply chain for its materials and other resources (New Building Case Study, 1). Case 1 also established a fair trade shop, which consolidated the policy as well as creating an awareness raising project.

5.13.1 Operations: Conclusion

Whilst all schools have policies such as the travel plan, waste management and procurement, whether these policies have been developed in light of sustainable development is based on **an individual case**. For example, Case 1 seeks to review most of its policies in light of a sustainable development agenda, whereas other schools focus on one or two issues. In addition, the scope of the policy varies from school to school, the policy may affect a range of issues and processes in the school or only one process and issue. The operations that schools engage with are partly determined by the framing of schools’ policies, and whether their initial aim is to have a narrow or wide impact. In addition, some schools exemplify the development strategy for their policies basing them on their local contexts and school’s stakeholders as well as a re-framing of the larger aim.

5.14 Barriers

All schools experience barriers to move towards ESD. These barriers range from education being a public service to individual attitude and behaviour within schools.

5.14.1 Public service context barriers

5.14.1.1 UK Governmental Assessment of Education

As a public service, the education system in the UK follows a *'quasi-market'* model where schools are in competition with each other based on the governmental assessment of *'easily measurable outcomes'* (Head teacher, 1). This means individual schools are under pressure to perform, where schools' **performance** is measured by the test exams in the selected subjects of maths, reading and writing. If schools do not achieve, they might be under pressure to narrow the curriculum down. This presents a huge barrier for the schools that are not achieving the highest marks, but believe ESD to be at the core of students' development. For example, Case 1 experienced other contextual barriers, such as deprived community and apathy of parents towards their children that led students to poor test results. However, school leaders had a strong belief that ESD was at the core of holistic development and attainment of their students and therefore the school continued with its work in ESD. The new school leader shared the view of ESD with the government, to be separate to the core attainment of the children, the leader therefore yielded to the pressures of targets, and the changed schools' priority. "But at the moment it is not a number one priority ...the short term we are looking *at the moment is the results...*" (Deputy head teacher, 1). This shows that the school is able to overcome the barrier presented by the government if the leadership is strong and views ESD to be integral to the students' education and not on the periphery.

5.14.1.2 Changing UK governmental agenda

'Easily measurable outcomes' is the only agenda by the government that is **consistent**, whereas other reforms that the government undertakes, including

sustainability, are usually fleeting. Whilst the previous government (1997-2010) was supported an ESD agenda, the new government (2010-onwards) has discontinued numerous projects and works on ESD. *“Sustainability, they’ve cut it completely out of the agenda, which is really appalling”* (Head teacher, 3). This context presents challenges to all schools, those that are in the process of ESD as well as those that are just starting.

5.14.1.3 Changing UK governmental agenda: Decrease in resources

An outcome of such ‘fleeting’ priorities of the government is **the inconsistency of the resources that schools receive**. For example, the old government’s priority of ESD meant that human and monetary support was available to the interested schools to carry forward its work with ESD. Once the government changed, schools that were engaged with ESD lost their support. For example, Case 2 have been doing a lot of work towards ESD but relied most heavily on the external partners to provide it with human resources as well as ESD knowledge. As a result of the changed government, the school’s work in ESD has diminished due to the diminished resources provided. For schools that are starting ESD, these changed priorities of the government do not present a favourable context.

5.14.1.4 Changing UK governmental agenda: Lack of priority

Fleeting governmental priorities and reforms are also reflected in **the schools’ and individuals’ attitudes to change**. Some schools for example do not see value in changing unless it is part of the on-going governmental agenda that either can be **recognised or supported by the government**. In this view, overall change is considered, regardless of ESD or other agendas where it is seen as an add-on by individuals and the school. Therefore this attitude that schools have is **preventative to engaging with ESD**.

5.14.1.5 Conclusion

Governmental view and action towards ESD has repercussions with schools. It affects their view of ESD, attitudes towards change in general, including ESD, and

ability to take action. The ever-changing government, with its ever-changing view on ESD, means that schools cannot rely on it completely for support. Most successful schools have developed their own understanding and attitude towards ESD, and their own resources to work towards ESD and see the government as one of their partners, when the values of government coincide with the ones of the school. These barriers also point to the importance of leadership and the leader's role in developing ESD within a school.

5.14.2 General skills and knowledge barriers

5.14.2.1 Defining Education for Sustainable Development

Schools that are starting to move towards ESD (Cases 4 and 5) find it difficult to relate sustainability to education and articulate what actions schools would need to take to move towards sustainability. *“What is a sustainable school Stef?...What is it? It's one that ummmm, well sustainable means if you can look at all the energy usage”* (Head teacher and TA, 5). This is also a barrier during the assessment period of self for schools that are moving towards ESD (Case 2). Showing progress in ESD achievement while there is no specific definition of ESD is complex. Some schools view the definition of ESD as an iterative process and their school as a learning organisation. Defining sustainable development issues, relating them to the local context, setting their own targets, measuring its achievement and redefining ESD for their own context, are strategies that some schools (Cases 1 and 3) have taken in their move towards ESD.

5.14.2.2 Inability to transfer knowledge to students

The knowledge on the issues of sustainable development is perceived to be generally available, and the need to become more sustainable to be an explicit one. Yet the barrier as perceived by the schools, seems to be a gap between that knowledge in adults and the ability to communicate it with the pupils *“Although we as adults are aware of the need for change if we are to protect our environment and sustain the impact we have, I don't feel these messages are relayed sufficiently to*

children" (Staff Questionnaire, 4). For schools that are working towards ESD, as well as those who are at the start of the journey, transferring such knowledge presents an issue. The complexity of issues is a factor when embedding them into the primary school curriculum. Issues are global, systemic and abstract, making the process of simplification and practicality a necessary step to relay the information to the young students without overwhelming them.

5.14.2.3 Constructing curriculum

One of the processes engaged by the schools moving towards ESD, is incorporating sustainable development work that the school does into the curriculum in order to enrich the curriculum and to embed ESD into the whole school. Case 1 found that its teachers were not trained to construct their own curriculum. *"Teachers recently...what they haven't been trained to do is to construct a curriculum"* (Head teacher, 1). As a result, a team of senior leaders within the school was developed to support teachers in their skill development.

5.14.3 Organisational barriers

5.14.3.1 Change in Leadership

Change in a school's leadership is an important barrier to developing ESD. Developing ESD is developing a particular culture in a school with its ethos and values. As seen in Case 1 and mentioned in Case 5, change in leadership might prevent a school from engaging with such development. This may be due to personal attributes of the leader, their beliefs and values that affect their strategy for the development of the school (for example, Case 1). Or it also may be due to the high turnover of leaders in a school with an on-going set of priority changes. *"A lot of younger heads, they only do two, three years, and they move to another larger school, because their salary goes up"* (Head teacher, 5).

5.14.3.2 Lack of resources

One of the common barriers for staff in developing ESD is the lack of resources. This is particularly a barrier for the schools that are new to the topic. Developing ESD requires resources including time to do research and human resources.

5.14.3.3 Deprived context

A few schools are located in deprived areas. Deprived areas affects issues that schools need to prioritise. Lack of support from parents, lack of monetary resources, poor capabilities of children, higher intake of Special educational needs (SEN)/English as additional language (EAL) children are all seen to relate to the context of a deprived area and as barriers to starting ESD. This correlates with a view of ESD being additional work that teachers/school needs to do, and an additional set of resources that schools need to have in order to pursue ESD. Having strong leadership and viewing ESD as a strategy for change and improvement that includes environmental, social and economic dimensions may transform this barrier.

5.14.3.4 Staff participation

Participation of staff is seen as an important factor for a school to move towards ESD (Cases 1, 2 and 3). While in all schools there are some individuals that are not taking part, in Cases 4 and 5 this is felt most strongly. In Cases 4 and 5, the knowledge about the projects that relate to sustainable development exists, and there seems to be general interest in the topic, but the participation in these projects as well as contribution of ESD into the curriculum is very low. This suggests that despite personal enthusiasm, the staff do not participate. This may relate to time, resources, or it may relate to opportunities provided by the school.

5.14.3.5 Lack of monitoring, assessing, planning

Monitoring progress, assessing and planning are essential processes for improvement and development within any area of a school's life, including ESD. In some schools such processes occur on all levels, school operations, curriculum,

projects, staff performance. Lack of such processes is a barrier for schools' ESD progress. Case 1 experienced change from ESD being monitored and planned for by the head teacher, to the situation where it *"will be on the proverbial back burner, bubbling away slowly"* (Deputy head teacher, 1). Therefore, developing leadership in this area is one of the important strategies to overcome such a barrier. In addition, schools may be involved with awards schemes (Case 2 and 3) where these processes are a part of the application.

5.14.3.6 Lack of school support

Staff in two of the schools (Case 4 and 5) feel that there is not enough internal support from the school for teachers to participate and therefore support ESD. In these schools, staff felt they do not have enough knowledge to embed ESD into the curriculum, there is not enough projects to take part in, and that there is a general apprehensiveness towards an ESD agenda internally.

5.14.4 Organisational/individual barriers

5.14.4.1 Clash of values/priorities

A common issue that schools experience is the lack of external and internal support due to lack of shared ESD values. For example, the organisational values of a school's partners may not coincide with the values of ESD and sustainability, or some individuals (staff, parents) may not see this to be a priority to them personally. Schools have used several tactics to overcome such barriers. Schools use strategies to educate their partners about sustainable development issues, showcase sustainable development solutions and explore the general benefits of sustainable development. In addition, schools seek to develop win-win situations for their partners. Communication strategies become an important asset in this process, being able to show added value within a particular context in a creative way helps schools to encourage and receive support.

5.14.5 Individual barriers

5.14.5.1 Staff knowledge

In Cases 4 and 5, where ESD is not well embedded, school staff experiences a lack of knowledge and therefore confidence in the area of ESD, to contribute to it at the classroom levels.

5.14.5.2 Particular interest

If some staff are disengaged with the concept of sustainable development, others have a particular reason for their disengagement in particular situations. For example, a teacher had a personal dislike of a particular task. *“I do not like working with animals”* (Staff questionnaire, 3). This is not detrimental as the school has more than one area that the staff might be involved in.

5.14.5.3 Barriers conclusion

It is clear that ESD is generally perceived by all schools to add value to education and most individuals do not feel personal barriers towards the agenda. However, it is also clear that ESD is an organisational agenda of individual schools. Most schools experience external barriers imposed by the government, uncertainty in ESD definition, clash of values of partners or a particular local context. These external barriers place certain pressures on the schools, affecting the schools' views of what ESD is, what is possible to achieve and the attitude towards a change process in general. For schools that are at the beginning of the ESD journey, external barriers provide an impediment to initiating change. However, evidence shows that these barriers may be overcome when the school spends time developing ESD within their own organisation and is willing to place ESD as a priority to its work.

Internal or organisational and individual barriers that are experienced by schools that have not been involved with ESD are experienced by other schools at a much lesser level as they have learned to overcome or eradicated such barriers in the

process. For example, some internal barriers have been dealt with by school's developing an understanding of what ESD is in relation to their school's context, and taking time to understand the needs of the staff and creating internal structures that support staff in their work towards ESD. For example, a school that understands the needs/preferences of their individual teachers will be able to support them in an overall ESD agenda of the school.

Two major organisational barriers mentioned are, lack of strong ESD leadership and time/resources. These barriers also relate to both types of schools, the ones that have been working towards ESD for some time and the ones that are just starting. For schools that have ESD embedded strongly in its operations, curriculum, and other projects, a change in its leadership or resources may be felt strongly but to a lesser degree than if the school is only at the initial stages of ESD development. Time is a resource that is lacking in all schools at all times, therefore it is important for schools to engage with activities that are strategic and specific to the aims of the school.

5.15 School Motivation

Schools in all cases expressed motivation to work towards ESD on both personal and organisational levels (see Figure 5-28).

5.15.1 Personal motivation

Staff and leaders have expressed a strong personal motivation to work towards ESD. Some individuals have a **strong belief in the overall importance** of sustainability, particularly in Cases 1, 2 and 3. Some individuals expressed a **deep personal philosophy about the issue**, for example, in Case 1 the head teacher defines the relationship between the man and nature and awareness of the damage that man is doing to it and the desire to revert it. Some individuals are motivated by **general environmental and social concerns** such as, '*less pollution*', '*social concern*', '*green issues*', '*community awareness*' (Staff questionnaire, 4). For others it is expressed in **practical and action oriented issues** where one **makes a difference**, for example

'saving energy, saving money, looking after/caring for community and school grounds' (Staff questionnaire, 4 and Head teacher, 4). For others, it is about **personal experiences and activities that individuals have done or currently enjoy**. For example, it may relate to individual's studies, *"... when I went to college, my main subject was environmental education"* (Head teacher, 1). For others it may relate to their hobbies, *"I have great passion for gardens, the outdoors and nature. I used to own 3 ½ acres of smallholding"* (Head teacher in School website, 3). These motivations have been expressed in all the schools, including the schools that have had less ESD activity. For example, in Case 4, where the activities have been at a minimum there is a great experiential knowledge on sustainability from the head teacher as well as other staff. Case 4 head teacher has a goal of *"having a small holding"* (Head teacher, 4) whereas another teacher in the school has been forest trained.

While for individuals in schools that are working towards **ESD personal ideology about sustainability is a driving force for action**, for the leader in Case 4, it is not. In Case 4, the head teacher is not focused on a particular ideology, instead he views himself as a problem solver. *"There isn't anything that we can't do, if there is a problem, find a solution"* (Head teacher, 4). Therefore this leader is driven by solving problems of any kind. This might explain why in Case 4 most of the work has been done with the immediate needs of the school.

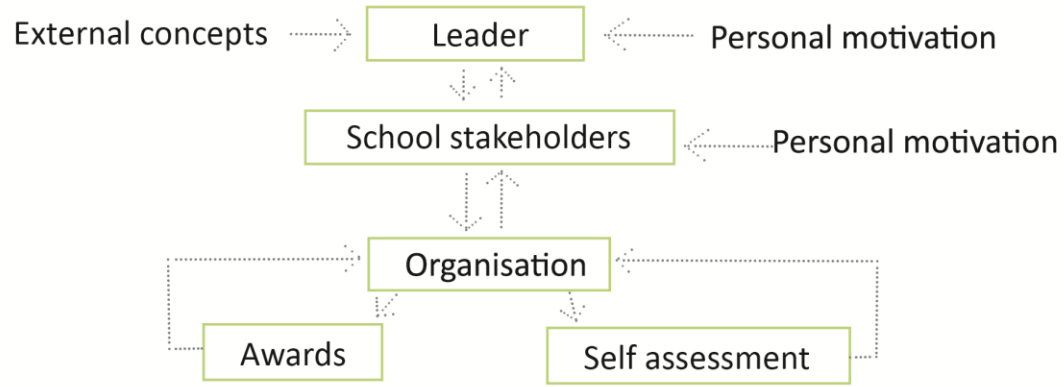
5.15.2 Combined Motivations

Some motivations that are experienced by individuals in the school to pursue ESD are a result of combined personal and organisational motivations. For example, for staff in Case 2 there is no differentiation between personal and organisational motivations. For them pursuing ESD is rooted in what the school does, the aim of the school, and the school's ethos.

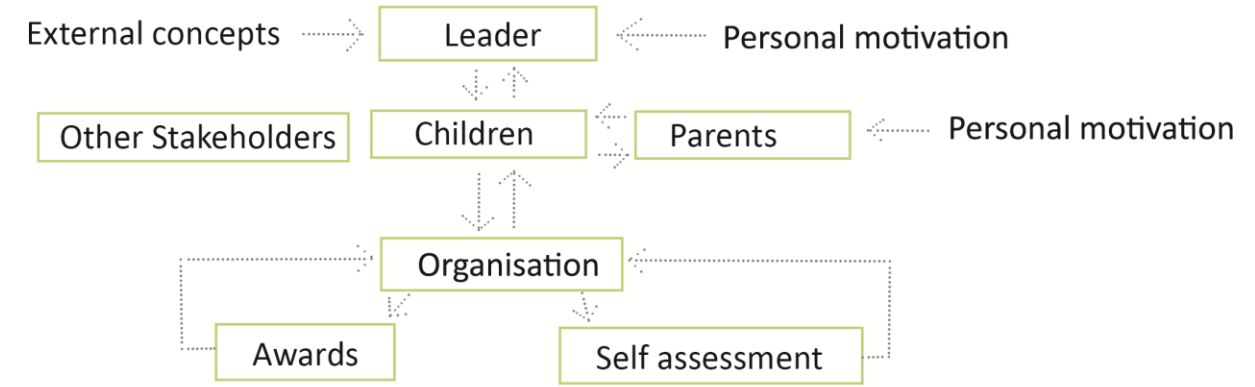
5.15.2.1 Positive work environment

In Case 3, the staff experience personal motivation to come and work at school where they feel joy and excitement. This is rooted in school's work towards ESD. In particular, ESD work that the school

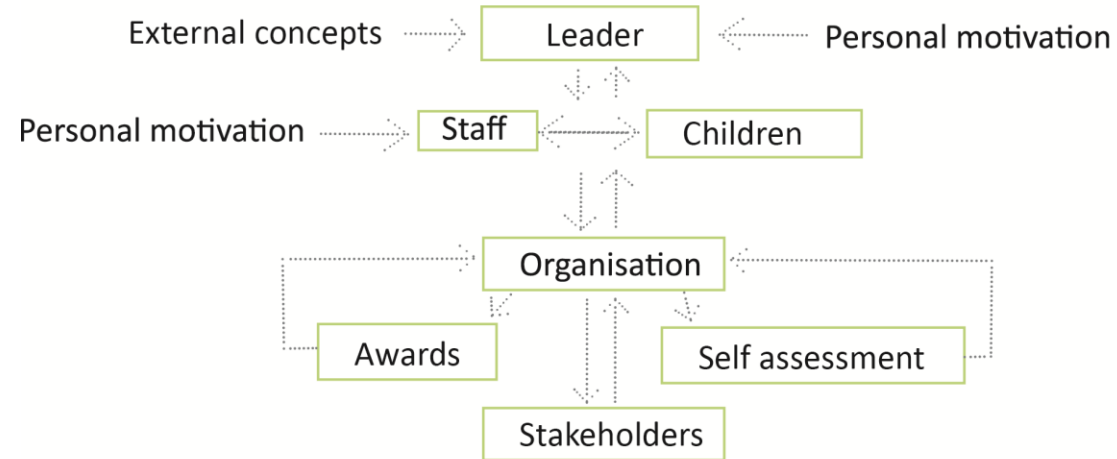
Case 1



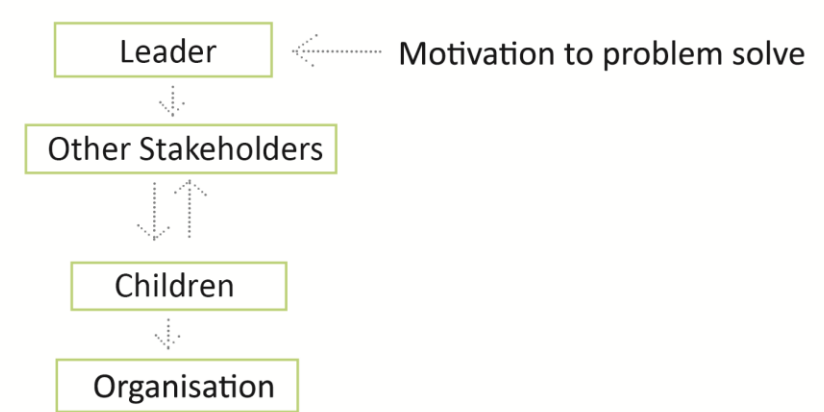
Case 2



Case 3



Case 4 General motivation



Case 5

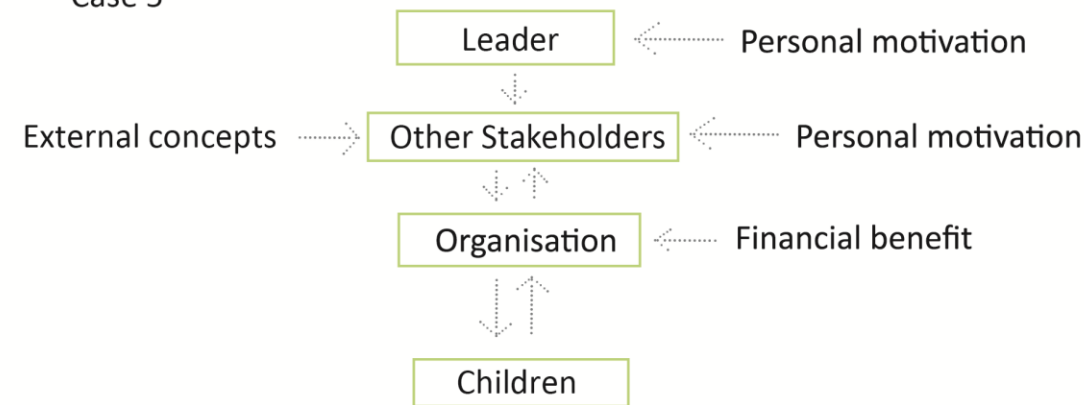


Figure 5-28: Schools' Sources of Motivation for ESD (General Motivations for Case 4)

does, encourages a richer life in a school and a different type of interaction between staff and students, than the usual top down approach. This new experience at an organisational level resonates with the individual's personal feeling about their role as a teacher, affecting their overall motivation.

5.15.3 Organisational Motivations

5.15.3.1 Positive impact on children

In all schools leaders and staff experience motivations to pursue ESD that they relate to the school itself and the school's main purpose. There is a general belief that ESD provides a positive impact on children. *"If it doesn't impact the children in a positive way then I won't bother taking time doing it"* (Head teacher, 5). Schools that are working towards ESD see this impact to be both academic and to relate to the general well-being of the students. There is a consensus that what is being done is to the benefit of the children for their future. For example, there is a motivation to develop 'eco-warriors' or responsible citizens, which includes promotion of specific behaviours. ESD is inclusive, and the impact it has on high level needs children is a great motivator for Case 3 school. *"Seeing the children having fun whilst doing it, helping high level needs children, and making a difference to them"* (Staff questionnaire, 3).

Case 4 is currently not including ESD into the curriculum. However, its expressed motivation lies in the academic impact that ESD may bring to the children.

5.15.3.2 Developing an organisational ethos

Some schools also share the view that sustainability is not only important for the children but also for the school itself, leading schools to engage in sustainability through projects, operations and other work. One of the motivations experienced by the Cases 1, 2 and 3 is to develop a sustainability ethos in the school. There are different underlying reasons for doing this. For example, Case 1 seeks **to avoid 'green wash'**; this leads the school to engage with many different projects.

"Certainly recently...have been more critical of what we perceive as sustainable and

we are trying to sort of ratchet up how actually sustainable we are in many sorts of different ways” (Head teacher, 1). In Case 2, the motivation is to develop a caring environment, where caring for the environment is an important area along with caring for self and others. In Case 3, the underlying reason was to consolidate everything the school has already been doing, *“I wanted to put at the centre of the school, the ethos and the values that the school held dear”* (Head teacher, 3).

5.15.3.3 General engagement with ESD

Unlike Cases 1, 2 and 3, where the motivation is to place ESD at the heart of the schools’ ethos, in Cases 4 and 5 the motivation is less clear. In Case 5, the underlying motivation seems to be for the school *‘to do something’* about ESD (Head teacher, 5). This motivation seems to be weaker than the motivation to develop ESD as a school culture and has led Case 5 so far to work at a lesser involvement and on the periphery of the school’s development. Motivation in Case 4 for some of the projects also seems to reflect an interest *‘in doing something’*. This is reflected in a couple of *‘planned’* projects in the school but not in anything that school is currently working on.

5.15.3.4 Sustainable development as cost/benefit

Some schools experience financial motivation to pursue certain projects within ESD. For example Cases 1, 3, 4 and 5, consider finances as one of the important issues. However, for Cases 1 and 3, financial benefit is an implicit issue and is not an explicit motivation. Rather it is something that is always connected with a motivation of having impact on the environment and children /or community.

In Case 5, saving money is an explicit motivation for the whole school to develop its work and its projects, including students’ eco council. The eco council considers *“what we can do next to save money, and save money but the focus was not on money but saving energy, and money as well, and recycling and all those sorts of things”* (Head teacher, 5).

In Case 4, financial benefit is a strong motivation, which leads the school to see “*sustainability in terms of eco – but also cash*” (Head teacher, 4). This motivation leads to work that resides within the school organisation outside of its purpose as an educational institution. Therefore the projects that this leads to, do not have an active impact on the children or staff, but rather a passive one.

5.15.3.5 Innovation

For the school leader in Case 4, moving towards sustainable development is perceived as a change that entails a potential innovation in how the school is run. To be innovative, is one of the motivations for the school’s development, “*the management team...and its staff thrive on innovation, change and development*” (Children Services, 4). Although such motivation may be a driver for the school to get involved with ESD, it may not allow the school to sustain its work in ESD in the long term.

5.15.3.6 Leadership

Having leadership in ESD is an important motivational factor for the school to engage with the agenda. In Cases 1, 2 and 3, head teachers are a ‘*huge motivation*’ (Staff questionnaire, 1) for the school’s work in ESD. “*The headmaster who is the inspiration and driving force behind everyone*” (Governors website, 3). Head teachers in these schools have a personal passion for sustainability, combined with the organisational passion to lead their school to the highest achievement in the area. These leaders are responsible for initiating ESD work in these schools. They also stay engaged with the agenda, motivate and support the school and the staff on the an-going basis.

In Cases 4 and 5, head teachers are also seen as leaders and a motivation for general change in the school. However, although both leaders have personal ESD interest, their motivation to pursue it at an organisational level is limited. Both head teachers initiated ESD work by distributing it to other staff, placing the whole responsibility of its development into those individual’s hands.

5.15.3.7 Distributed leadership

In Cases 1, 2 and 3, the staff are able to take on leading roles in certain parts of the projects, operations, or other work, expanding the notion of leadership. Therefore, ESD leadership is distributed in these schools, and motivation is reciprocal, staff are motivated by the head teachers who in turn are supported and motivated by staff. In Cases 4 and 5 however, ESD leadership is in the hands of single individuals, with less output. Therefore these schools experience a narrowed down scope of motivation.

To move towards ESD, schools require leaders. Schools that have leadership at several levels including the highest level, the head teachers, experience high motivation to work in that direction. This motivation is also instigated by active leadership. In the school where the ESD leader was at a lower strategic position, and less active, less motivation is created with his/her colleagues.

In Case 4, the act of placing someone in a leadership role was recognised as admitting that area is an important area for development within the school. This act in itself created motivation and interest from the individuals within the school.

5.15.3.7.1 Leadership and distributed leadership

Schools that are working towards ESD in an active approach, will have both school leaders (the head teacher) involved with ESD agenda and other staff to whom leadership has been delegated. This provides a strong motivation for the whole school. Schools that are least involved with ESD have leadership distributed to a single individual, usually not a senior leader, with little decision-making power. Therefore motivation for working towards ESD in these schools is less.

5.15.3.8 Self-assessment

Cases 1, 2 and 3, undergo self-assessment with the help of students (for example, eco warriors) as well as for the purpose of writing grants, awards applications, etc.

This process also provides schools with an organisational motivation to engage and further contribute to ESD.

5.15.3.9 Awards/Recognition

The longer term enthusiasm in some of the schools (Cases 1, 2 and 3), on an organisational level is kept up by the feedback or evaluation that is provided from external sources to the school (Ofsted reports, green flags, receiving grants). This feedback also helps the schools to formulate and strengthen their ethos and culture as a sustainable school.

Applying for awards is seen as a negative motive at the beginning of the ESD journey. The fear in this case is that the school would aim to achieve the award and spend too much time on application for awards and not the work for which the award is given (Cases 1 and 5). Conversely, application for an award is a positive motivation to reflect on the ESD process and therefore should be engaged with once the school has several years of ESD experience.

5.15.3.10 Stakeholders

Other stakeholders such as the local community, parents, and local government, may provide motivation for schools to pursue their work, through participation, funding, general interest, or other means. This is felt very strongly in the context of Cases 2 and 3, where parents provide a vital motivation for ESD work. *“This school would not survive without the wholesale support of the parents and the governors”* (Head teacher. 3). In other cases, the role of the stakeholders is vital, yet they are not the main source of motivation for the schools.

5.15.3.11 Conclusions

Schools that engage with ESD at a deeper level, Cases 1, 2, and 3, have evidenced strong motivation at both personal and organisational levels that support each other. Personal motivations in these schools range from sustainable development ideologies to interest in sustainable development specific tasks and reside with the

school leaders and school staff. Leaders who have strong personal motivation combine them with the organisational purposes of the school. ESD leadership is found both in the position of power such as the head teacher, as well as distributed. In this instance, the organisation engages with individuals' personal motivation towards ESD. In addition to distributing leadership, **leaders place ESD at the heart of what the school does, developing its ESD ethos and therefore motivation to become sustainable, which resides within the organisation.** The positive impact that this has on children develops the professional motivation of staff, which is one of the main motivations for staff to contribute to ESD at an organisational level. Having consistent organisational motivation to work towards ESD is important. This is partly provided by leaders and partly by other stakeholders, awards, and self-assessment that schools engage with. In these schools, motivation is not linear but a circular process (see Figure 5-28), personal and organisational motivations feeding into each other.

In Cases 4 and 5, where schools are less engaged with ESD, personal and organisational motivations are less pertinent to each other. As with other cases, leaders and staff also expressed personal motivation to work towards sustainability, where they range from sustainable development ideologies to personal hobbies and experiences. However, in these cases these motivations fed into the organisation to a lesser degree, while other organisational issues were given priority. For example, while both leaders have personal motivation to work towards sustainability in terms of the environment, their organisational motivations lie with the financial benefit that sustainability may bring or an opportunity for the organisation to innovate. These motivations are on the level of the organisation and do not consider the needs of the students or staff, nor the personal interests of the leaders themselves.

In addition, motivation for engaging with ESD on an organisational level, particularly within Case 4, lies outside of the main educational purpose of the organisation. By focusing on other areas rather than education, the school does not take the opportunity to engage its staff nor to create a professional motivation for them (see Figure 5-29).

In addition, in **Cases 4 and 5 motivation to work towards ESD is fragmented**; it arises sporadically and is not embedded into the school holistically. This means the schools have not been able to establish an on-going motivation within the organisation or to have an impact at a personal level.

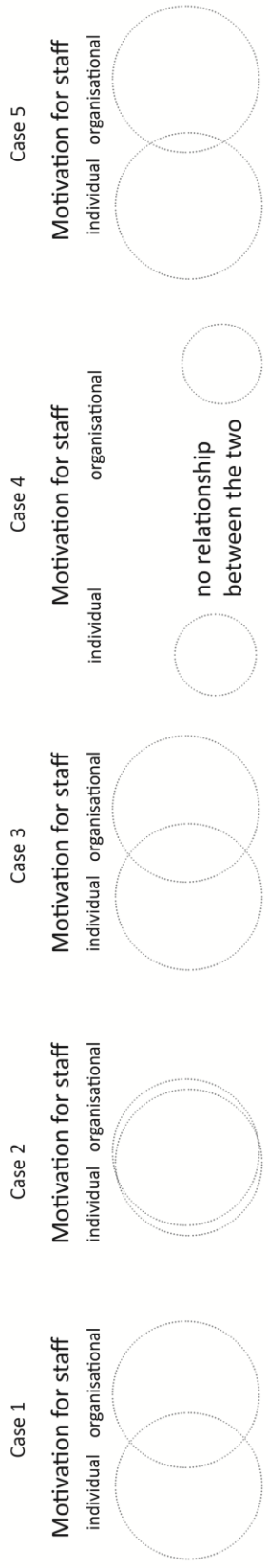


Figure 5-29: Motivation For Staff

5.16 Chapter conclusion

This chapter presented an in-depth cross-case study analysis of five English primary schools who are committed to moving towards ESD. At the beginning of the research the cases exhibited different levels of involvement with ESD, with some cases identifying themselves as non-sustainable. However, during the research it was found that all schools recognise ESD as an improvement strategy and have shown some involvement with ESD. However there is a great variation in their understanding of ESD, depth and breadth of work that the schools do, and awareness/reflection on what is being done.

The cross-case analysis was able to identify approaches and domains within which schools explore ESD and highlighted that more sustainable schools have an understanding and vision of ESD and their role within it. They develop sustainable development issues as part of the local context, involving a wide selection of stakeholders whilst integrating all elements of the school. Schools that are less sustainable do it to a much lesser extent, have narrow understanding of ESD and their role within it, and integrate it with only some elements of the school and fewer individuals.

One of the important attributes that has been highlighted by cross-case analysis is local context. It showed that being aware of the local context may help schools to develop ESD to a greater depth. A few of the schools that are moving towards ESD integrate sustainable development issues with a local context, making it relevant to the school and therefore engaging with it in a more meaningful way. Other schools that consider sustainable development issues, without consideration of the local context, engage with it on the periphery. Some of the issues and concepts that are addressed by the schools may also primarily derive from the schools' context rather than being developed through it. Addressing these issues makes the school really engaged with the process, approaching it in more than one way. However, whether the issues that the school addresses are issues of sustainability is not always clear and needs to be reflected upon by the school. When addressing ESD, some schools

also consider where within the school they are addressing it. Considering the needs and opportunities within all the aspects of the school, the school stakeholders, operations, curriculum, and school grounds, schools develop ESD in a way that is meaningful to the whole school and at a deeper level. This also allows some schools to be innovative in the definition of the problems and approaches to solving it.

The main stakeholder that the schools consider is the students. Schools that are engaged with ESD at a deeper level, see it as a strategy to develop children holistically both at an academic level as well as their emotional well-being. Although there is no direct link between ESD and higher academic results, there is a general belief that because of ESD, children are happier, are more motivated and satisfied with learning. In addition, there is a general consensus about ESD helping children to become citizens of the future, those who understand sustainable development issues, engage in critical inquiry of those issues and have capacity to address them both on individual and group levels. Analysis shows that schools that are least engaged with ESD see its value as developing citizens of the future, mainly through developing certain behaviours and some academic knowledge and less about development of other assets.

There is also less consideration about whether ESD helps children to engage with learning or not. The latter point relates to the type of pedagogy that ESD involves. ESD embodies different types of teaching and learning styles. However, one of the pedagogies that is strongly associated with ESD is experiential learning, which is based on 'doing'. Analysis shows, that in schools with high ESD activity, students become involved with this pedagogy through curriculum, projects, team work, operations that address sustainable development issues and have an impact on the school's sustainable development. These schools have a view of the student as integral to school's sustainable development and as an important aspect of moving towards sustainability. The school that is least engaged with sustainability also engages its students with experiential learning and receives the benefit of students who are engaged with their learning. However, the school does not consider sustainable development issues in this pedagogy, nor does it consider children to be

integral to its overall development. Therefore in this school, the children are not only experiencing ESD at its minimum, but they engage with experiential learning mostly through their formal curriculum.

For schools to engage students with ESD on a **continuous basis**, schools require an ESD ethos and **'whole school' support**. Analysis shows that **schools that have high ESD activity have spent time building and activating the support of the staff, community, and other school stakeholders**. One of the important stakeholders for the school to activate is staff. In schools where pupil engagement occurs on an on-going basis, staff are activated both on personal and professional levels. In these schools, leaders recognise interest, enthusiasm, and hobbies of the staff that relate to ESD and provide opportunities for them to be explored and further developed, usually through changes in organisational structure or by initiating certain projects. These schools also activate staff at professional levels, by making ESD part of Career Professional Development (CPD), curriculum planning, performance management and/or the hiring process. In low activity schools, the staff is activated usually through personal means and at a lesser degree through professional means. In addition, in these schools only one or two individuals are activated, whereas in high ESD activity schools the activation occurs throughout the whole school. However, the difference is not only whether the latter schools do it, but also to what degree. In schools with less ESD activity, the activation is more passive. For example, staff are **encouraged** rather than **expected** to include ESD into the curriculum. There are less opportunities to be involved with ESD and sometimes there is a lack of knowledge about personal interest and capabilities of the staff in relation to ESD altogether.

Schools also require the support of their partners to be able to move towards ESD and to have opportunities to engage students and activate staff. Analysis shows that all schools engage with partners from different sectors including the local community, government and businesses. Partners are able to provide schools with ESD and sustainable development knowledge, help co-create resources and experiences, or just share the resources and help schools to keep costs down. While

schools may be involved in different types of partnerships, one of the important elements is to have partners whose values and needs coincide with the ones of the school. Therefore it is important for schools to know and be aware of the needs and values of potential partners. Research shows that local partners play a great role in the schools. The local context for some schools is favourable, where the values of the partners coincides with those of the school. The schools are able to use it and build upon such support. The local context for other schools has not been as favourable. In this case, research showed that the school has been proactive to educate its stakeholders in order to make them its partners. The school has been strategic as to how the partners were educated, based on its larger vision. Analysis therefore showed that schools that have a vision engage with their partners strategically and in a more proactive way, building a strong support, whereas schools that do not have a vision engage with partners sporadically and with less long-term benefit.

As the cross-case analysis highlights, schools that are involved in ESD do not only embed it into the curriculum, but across the whole school through projects and operations. Projects are an important element of ESD, as it is a way for the school to engage with the issues, to bring different school elements together, and to engage multiple stakeholders. The analysis shows that schools that have high ESD activity have engaged with a large amount of projects on an on-going basis, whereas the schools that were starting to work towards ESD were also developing projects but on a smaller scale and with less reflection on the purpose for engaging with them, the type of project school engages in and its impact.

High ESD activity schools engage with projects to establish themselves as sustainable schools and to build a high profile for sustainability, internally and externally. They do so by undergoing a 'push moment', a time of intense periods of activity working on projects. Schools exhibit different strategies; it may be through one large, whole school project or many small ones. Nevertheless, once the school established itself as a 'sustainable school' it finds it easier to continue its work towards ESD. The schools that are less sustainable work on some projects, but have

not had the experience of 'a push moment', where the whole school is involved. Yet, the school can experience a 'push moment' at any time and therefore schools with less sustainability can engage with the process at any moment.

How schools engage with projects and what types of projects, may determine the activity level of ESD in the school. Some schools establish projects that are on-going, keeping involvement of the whole school and the profile of ESD high. In addition to that, they add 'push moments', where part of the school or the whole school is involved in a large one-off project, or group of projects. These schools therefore are involved in creating a template which helps them keep ESD activity high and stable at all times. Whereas high activity moments, help them to develop a new issue or continue to develop the on-going topic. Other schools are less consistent with their work. Usually schools have established one or two on-going projects, and then become involved with a short, one-off project sporadically, involving a handful of individuals in the school. This type of approach leads to low ESD activity, and does not allow for ESD to have a high profile within the school.

From the analysis it may also be concluded that when schools do engage with a project, it provides an opportunity to undergo a learning process, both on individual level as well as organisational levels. For example, through a project an organisation may learn a new behaviour, or through a 'prototype' project, a school may learn about the limits of a solution or better understand the school's conditions. The learning process is most visible when schools are able to apply knowledge they have gained in one project to another project. Analysis shows that this occurs most often in schools with high ESD activity. This may be due to these schools being involved in an on-going reflection on self and its work, whereas other schools spend less time reflecting.

The research also shows that schools consider ESD within their operations. Some of the schools not only embed a particular sustainable development issue into the operation, or seek to engage with a particular behaviour through operation, but they try to expand the operation to reflect the local context of the school. This

provides schools with an opportunity to evolve their operations, making them unique to the school, which is seen as an important aspect by the schools as it helps them to contribute to the needs of the local context. In some cases, schools have reflected not only on their context, but also themselves as an organisation, and asked what is their aim with a particular issue? This reflection led to not only an expansion of operations to include different elements within the same process, but to developing new and unique solutions. Schools therefore are not stifled by the process of developing the old operation but can also add new ones, developing new behaviours and knowledge.

From the research, such **integration is also highlighted in the motivations exhibited by the schools**, in particular integration of personal motivations and organisational motivation to work towards ESD. The schools that were highly involved with ESD included individuals who experienced high personal motivations on a wide scale, which was integrated with high organisational motivation (based on the schools' ethos and aims). Whereas the schools that were less involved with ESD experienced personal motivations at a lower degree and in lesser numbers, and with minimal organisational motivation.

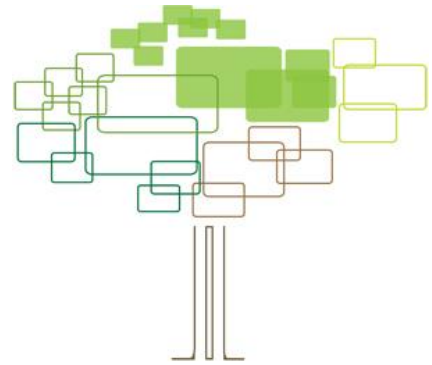
The importance of organisational elements for schools to move towards ESD is also most visible in the barriers that are experienced by the schools. In particular, most ESD barriers that were expressed by the schools are organisational rather than personal. In addition, most barriers, both external and internal, are felt most strongly by the schools that are at their early stage of development, and have been overcome by those schools that have been working with ESD for some time. This indicates that the process of moving towards ESD in itself can be a strategy to overcome such barriers.

The cross-case analysis also identified that although a particular vision of ESD is developed in each school, there is no order or sequence of events that might be identified as a correct one. Instead analysis identified different conditions, approaches and processes that are considered by schools at different periods of

time. Some activities are discussed to be more relevant at a particular time period of school moving towards ESD (for example, Eco-Schools evaluation is more appropriate after the school has started its work on ESD, rather than at the beginning), however, most components discussed within the cross-case analysis may be initiated at any time during the change process.

What analysis also brings to the fore is the process, boundaries and variations of individual strategy or activity that could be considered and engaged with by the schools (for example, activation of staff could occur on professional vs. personal levels). Research showed that schools that are more engaged with ESD engage with strategies and explore these boundaries at a greater level than those that engage less with ESD. However, at the same time, research shows that schools that are more sustainable may sometimes exhibit the same behaviours as the less sustainable schools and less sustainable schools sometimes exhibit behaviours of the more sustainable schools. Therefore the considerations, strategies, activities and processes of all schools are important when further work is developed.

6 Development of the conceptual Sustainable Education Service Model (SES Model)



This chapter describes the development of the SES Model. It then illustrates the model and discusses individual elements in detail. The sense-making process of ESD with Service Designers is also presented, and future improvements to the model described.

6.1 Introduction

Education for Sustainable Development is a vision for transforming the educational system in its entirety to support change towards a sustainable society. However, during the literature review different challenges have been defined for educational institutions in England to move towards ESD and therefore to engage with the change process on a wider scale. One of the main challenges was the need for an outside-in facilitated normative re-educative approach that will consider change towards ESD. Such an approach requires collaborative problem solving and participation of all members affected by the change. It was recognised that, not only such approach was under developed, but the tools that were available to educational institutions to engage in such a change process showed a series of limitations (see Table 2.7). At the same time, service design has been identified to have a collection of tools and methods to enable normative re-educative change (see Section 2.3). However its knowledge of the educational context, in particular

the context of ESD that is required, is non-existent. This gap in knowledge has been identified due to a lack of literature within service design on the subject, which is one of the areas where this research seeks to contribute.

For service design to engage with the change process, an understanding of the system's elements it seeks to design or redesign is needed (Steen et. al, 2011). The system's elements are defined by the type of change that is required. Normative re-educative change towards ESD necessitates understanding of design and structure of a social or organisational system that is moving towards ESD. As ESD resides within educational institutions, service design needs to understand **ESD change on organisational level**. Normative re-educative change also requires an understanding of **social and personal norms and values residing within organisational systems**.

The knowledge required to understand a system's elements, as mentioned in previous chapters, may not be found within literature due to insufficient research in the area, leading to empirical studies undertaken during this research presented in detail in Chapter 5. The empirical findings of the research inform the definition of system's elements. Literature recognises that educational institutions are service providers, and therefore the system that requires change is a **service system** (Kuzmina et.al, 2012). This definition of the system is also relevant to the work of service designers, and contributes to the understanding of the system's elements.

Further, while this kind of knowledge may take different forms, models have been widely used to inform the design process and are particularly important when design deals with other disciplines, systems and services (Mendel, 2012). In particular, conceptual models that are used to represent a particular phenomenon in a real-world domain (Weber, 2003). In design, conceptual models represent solutions in the domain (Schermann et. al, 2009) as they *"represent the idealised view of how a particular system works"* (Johnson and Henderson, 2002: 26), which is useful to designers in more than one way. For example, these representations are an effective way for designers to gain an understanding of the complex real-world phenomena (Mendel, 2012). In addition, they help designers to **"frame and guide the discovery process"** (Mendel, 2012: 1) as well as **evaluate the solutions** during

design process while **constituting part of what is being created**. This is particularly relevant to the gap in knowledge that service design has with regards to sustainable development in the domain of education and the lack of support in engaging at a normative re-educative level.

To address this gap a conceptual model of Sustainable Education Service Model (SES Model) has been developed. The model is intended to be used by service designers to develop an understanding of ESD as service phenomena. In addition it is to be used as a tool during the design process helping service designers to engage with the educational institutions in the normative re-educative change process.

6.2 Purpose of SES Model

The purpose of an SES model is to communicate ESD as service phenomenon to service designers, in a clear way, in order to provide an insight into the phenomena. The purpose of the model is also to be used by service designers within educational institutions during the design process leading to normative re-educative ESD change.

The objective of the model is to communicate ESD phenomena to service designers in such a way as to build knowledge and understanding on the subject. It is also to be used with schools during the design process towards normative re-educative change.

It is recognised that service designers work across many domains, under time and cost confines (Knight, 2012). Therefore, the purpose of the model is to represent ESD comprehensively while providing a set of constraints for the designers to work within. In design, constraints are practical and helpful rather than problematic (Gedenryd, 1998), as they are a source for structuring and defining of otherwise open-ended problems (Eastman, 1969, Clarkson, 2005). In this instance, the constraints are defined by the purpose of the model. The need for the model to be used as a tool in the normative re-educative change means **the model does not**

represent ESD in its true entirety. Instead, ESD is situated **within the organisational context.** What the model seeks to do is to represent all the elements required for normative re-educative change, eradicating limitations in the understanding of ESD that may be found in other normative-re-educative tools (refer to Table 2-7). This corresponds with the ideas of Weisberg (2007) who notes that the model-world relationships are many and are determined by the purpose of the model.

Another purpose of a SES Model is to clearly communicate ESD phenomena to service designers. The model seeks to do this by representing ESD as a phenomenon of a service organisation, residing within a service system. Service designers share a language of services (Parker and Heapy, 2006) and common service theories are known as service thinking (Sangiorgi, 2012). Therefore, by representing this model-world relationship, the model will be more closely aligned with the model user, service designers. The view of ESD phenomena as service phenomena does not only pertain to the use of Service Design language and service theories, but corresponds with the view of education as a public service. ESD as change in a service has not been yet recognised and therefore this provides an innovative way to view the problem space, which also may be seen as contributing to this research.

Conceptual models provide an input into the design process (Wand and Weber, 2002). The purpose of the SES Model is to contribute to the collaborative design process between service designers and educational institutions at all stages. Its primary use is by service designers at the envisioning and evaluation stages, whereas at other stages it should be used as a 'reference model'. Its purpose is to guide service designers within the context of ESD and help them to focus on the important elements of the system, while being aware of how elements interconnect within the system. The model is **not a stand-alone tool**, but rather it should be used with other models, tools and methods that are available to service designers.

In addition, the literature review and empirical findings emphasise that for the schools that are at the beginning of the journey towards ESD, time, knowledge and human resources provide a great barrier to change. These barriers exist while

urgency to create sustainable change is pressing. This model then seeks to build the capacity of service designers to work with the schools at a normative re-educative level to overcome these barriers and to move towards ESD.

.

6.3 Developing a SES Model

From the discussion in previous sections in this chapter, it may be suggested that the SES Model (Sustainable Education Service Model) model has several requirements:

- 1.** The model should represent ESD as service phenomena.
- 2.** The model should represent ESD at an organisational level. It needs to include both organisational and personal norms and values residing within an organisational system as well as other elements necessary for normative re-educative change.
- 3.** It needs to take into account empirical findings as well as other relevant literature in relation to ESD.

6.3.1 SES Model and service phenomena

The SES Model uses service language and thinking as the lens to define the system's elements in order to provide an innovative view of the problem and to more closely align the problem with service designers.

Service language and thinking in Service Design has a strong influence from services and management (Kimbell, 2009, Sangiorgi 2012). Service thinking recognises the provision of service by service providers to the service users. Based on this logic as previously suggested elsewhere (Kuzmina, et. al, 2012), provision of education may be described as a service provided by the service organisation, the school, to the service user, the student.

What is defined by the provided service has undergone a shift from the traditional view to the Service-Dominant logic (Vargo and Lusch, 2008). Service-Dominant logic, which is recognised by service designers (Kimbell, 2009), is a value creating view (Edvardsson et al, 2006). It defines services not as an end product but as a process of value co-creation between the service user and service provider (Vargo and Lusch, 2004). The essence of the service is in value-in-use, which is generated throughout the interaction between the user and the provider (Gronroos, 2008). In this view, the role of the provider is to facilitate value to the user by providing a basis for value creation in the form of resources that may include goods, services, information etc., and where the provider is a co-creator of values during direct engagement with the user. The user creates value through value-generating processes by interacting with the resources, contributing their own skill and resources if necessary and through having a direct interaction with the service provider (ibid.). This is a shift from the traditional view of the service where value is embedded into the goods, activities and processes that the provider produces and offers to the user by exchanging it for money or an equivalent agreed form of remuneration (Vargo and Lusch, 2008, Gronroos, 2008).

The SES Model is based on the assumption formulated as a result of the empirical findings combined with service thinking. Empirical findings suggest that there are two types of relationships between students and the schools that were detected in the research (see Figure 6-1).

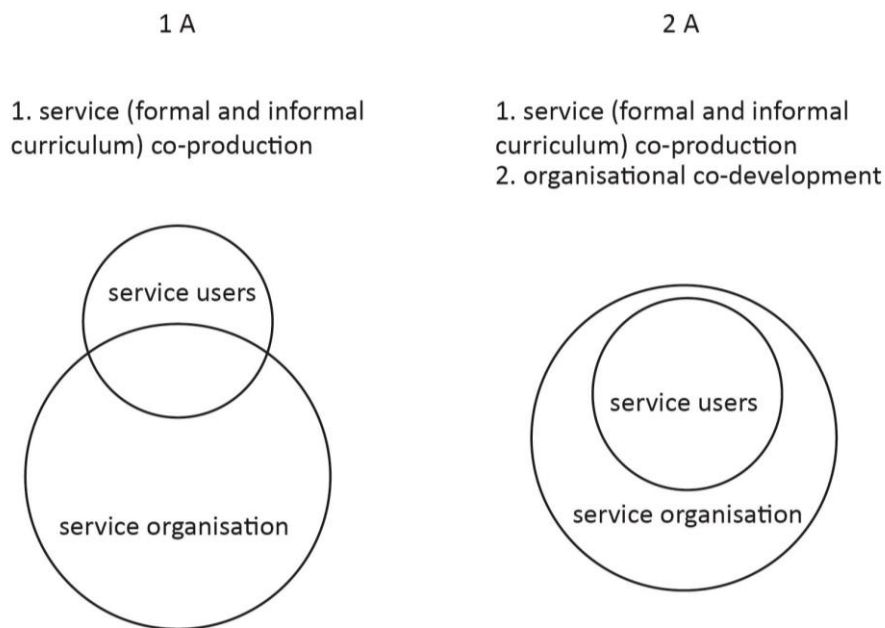


Figure 6-1: Overview of Two Types of Relationships Between Schools and Students

In the first instance, students participate in their education as both informants and recipients where they are encouraged to participate in active learning. However, their participation is limited to the classroom and an informal curriculum. In the second instance, students are not only participants in the curriculum (formal and informal) but they also take part in the development of their school. This is an additional experience rooted in critical thinking and development of empowerment in students. These relationships may be found across all schools regardless of whether they are moving towards sustainability or not. However, what empirical findings show is that when applied to sustainability, these relationships determine how schools become involved with ESD (see Figure 6-2).

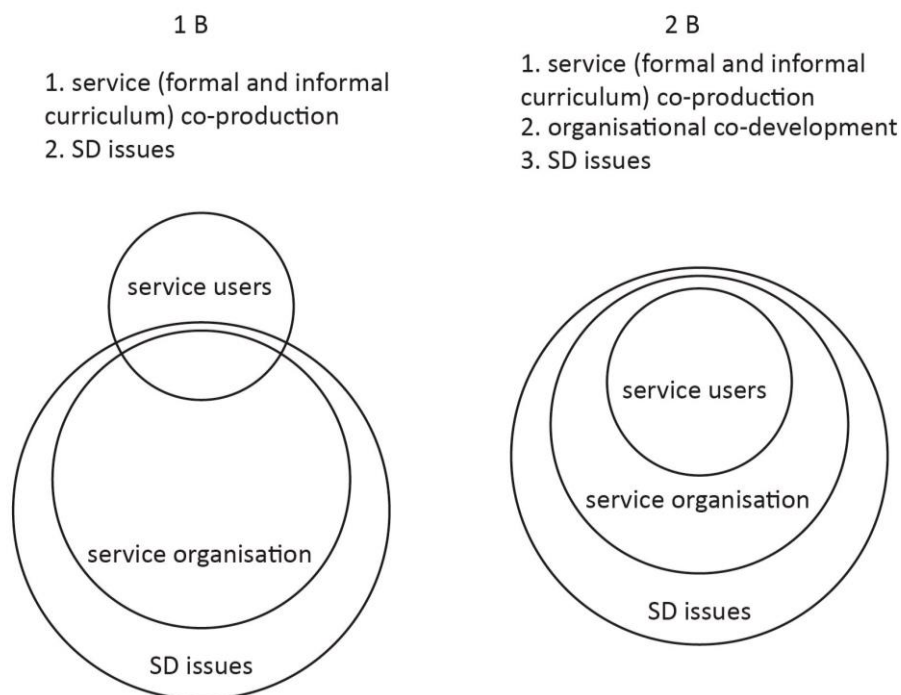


Figure 6-2: Configuration of the School Relationships in Schools Moving Towards ESD

In the first instance (see Figure 6-2: Figure 1B), students' participation resides within the curriculum (formal and informal) while the school engages with sustainable development issues. Therefore students' participation with sustainable development issues occurs only within the curriculum, separate to the sustainable development of the organisation. In the second school/student relationship (see Figure 6-2: Figure 2B), students participate in the curriculum and school development while sustainable development issues are integrated across the curriculum and the school development. In this instance, students are integral to the sustainable development of the organisation in addition to experiencing sustainable development in the formal/informal curricula.

When seen from the service thinking perspective, it may be suggested that when the service of education is defined within the boundaries of the classroom or formal/informal curriculum then education is already aligned with Service-Dominant logic. Here, the user (the student) is encouraged to be active and the needs of the user inform the pedagogy of the school. Therefore in this case, the

value of the service is already co-created between the user and service provider. However, from the empirical studies it may be observed that educational service can go beyond the 'primary' service provision. This education can be extended to include students' active participation in the development of the service organisation itself. In this case, what **constitutes the service of educational institutions is extended to include organisational development**. Therefore in this case, the full value of the service is only created when the service user actively participates in the 'primary service', or education they receive within the classroom, as well as by participating in co-development of the service organisation.

However for sustainable education to occur, this relationship between the service provider (school) and the service user (student) is not enough. From the empirical findings, as well as from the literature, schools need to engage with sustainable development issues. **This extends the concept of the service provided from education to sustainable education**. In this case, the **value of the service is created** when sustainable development issues, values and concepts are integrated as part of the service.

As shown in Figure 6-2, how this value is integrated is based on whether the school defines education as service provided within the curriculum only or includes user's participation within organisational development. In the former, the service provider needs to propose sustainable development issues, values and concepts and other resources such as knowledge and motivation of staff to its user to co-create value of sustainable education within the boundaries of individual classroom. In the latter, the service provider needs to expand definitions of sustainable development issues, values and concepts to include those relevant to sustainable development of the service organisation and provide the resources of the whole organisation, including personal values and motivations, in order for the user to engage with the co-creation of the primary service as well as organisational co-development.

It is important to note that configuration of the service provider transmitting knowledge to the user is not represented in these configurations, but exists in all of

the cases. It is an important part of the service that serves a particular educational purpose. It is also important to note that all configurations in Figure 6-1 and Figure 6-2 may be found in most of the cases (1,2,3, and 5), with the exception of Case 4, where configuration 1B is rare and configuration 2B is non-existent. However, only in schools that are most engaged with sustainability (Cases 1 and 3), is configuration 2B prominent. This research therefore suggests that it is the latter configuration that corresponds to the provision of sustainable education as perceived by the theory of ESD. However, this research does not suggest that other configurations should not be practiced.

The SES Model is based on the assumption that integrates the latter configuration (see Figure 6-2, 2B) as well as the notion of a 'whole school approach' from the literature review. The 'whole school approach' as defined in previous chapters, suggests that participation needs to occur on a wide scale by the whole school. This is further supported by the empirical findings. This means that ESD value co-creation needs to take place between all stakeholders who are involved in ESD service provision and all students who use the service on an ongoing basis.

6.3.1.1 Assumption

Based on the previous sections, the SES Model is based on a following assumption: For the user to experience the value of sustainable education as a service, the user needs to take part in co-production of the primary service (formal/informal curriculum) and organisational co-development at all stages and at the widest scope, while attending to sustainable development issues, values and concepts. For this to occur, schools need to provide a basis for value creation in the form of sustainable development issues, values and concepts integrated into the curriculum as well as organisational development, in addition to other resources of the whole school, both on organisational and personal levels.

6.3.2 SES Model overview

The SES Model is based on the assumption described in section 6.3.1.1 and represents elements that are necessary for the school as a service organisation to provide resources to the user to co-create value of ESD. Therefore, the model reflects both the organisational aspects of the school whilst recognising that it is a particular type of organisation, a service organisation. These elements are also relevant to the school's normative re-educative change process towards ESD as a service organisation. They emerged from the empirical studies and have been further identified and organised based on the Model of Organisational Performance and Change (Burke and Litwin, 1992). In particular, from the literature review, it was identified that normative re-educative change in organisations is closely associated with transformational change. Burke and Litwin (1992) suggest that there are several elements within organisations that are associated with transformational change, both on organisational as well as personal levels. These include external environment, mission/strategy, leadership, culture, and individual and organisational performance. However, from the empirical studies it was also suggested that other elements, such as structure and partnerships, which are usually associated with transactional change in the change theory (Burke and Litwin, 1992) are also important in the ESD change and therefore these elements are also included in the SES model.

The SES Model elements therefore include (see Figure 6-3):

External Environment – Includes elements of environment that have an overall impact on the organisation and its vision in relation to ESD but where the service organisation has least direct control of: general preconceptions, knowledge/understanding about sustainable development, governmental policies about ESD in England, the organisation's local context in relation to sustainable development issues/needs.

Service Vision – ESD service vision that the organisation develops. It integrates an internal vision of holistic ESD user experience and external vision, which considers the service provider’s contribution within a larger sustainability movement.

Organisational Strategy – The strategy that the school develops to move towards its ESD vision. The strategy for ESD is to consider one issue at a time and develop it across a whole service. Therefore the strategy considers what is being developed and how it is being developed.

Organisational culture – ESD organisational culture is proactive. It develops itself through strategic ESD entry points: project development, curriculum formal/informal, operations development and awards. These elements are integrated and numerous.

Organisational leadership – Organisational ESD leadership is distributed within the organisation and between the service providers and the user.

Organisational structure – ESD organisational structure has a flat hierarchy on an organisational level, as well as between the service provider and the service user.

Value created for User/Organisation – The outcome of ESD as a service. In ESD, the value is co-created for the user, the service organisation, as well as the service providers.

The relationship between these elements is based on empirical studies and the Model of Organisational Performance and Change (Burke and Litwin, 1992). In particular, these elements are interconnected, and a change in one element will eventually lead to change in another element. However, Burke and Litwin (1992) also recognise that there is a causal relationship between elements within the organisation. This is reflected in Liblier and McConnell (2012) who suggest that a causal relationship of elements is determined by a flow of information throughout the system and the type of information that elements host. Input information

defines organisational goals and is extrapolated from the external environment or from within the system. Output is the outcome that is being produced by the system. Throughputs are the structures and processes that convert input to output and the feedback is information communicated back about the output to adjust and change input. This circular relationship between the elements corresponds to the empirical findings that recognise sustainable schools as learning organisations where sustainable development is an on-going process of change.

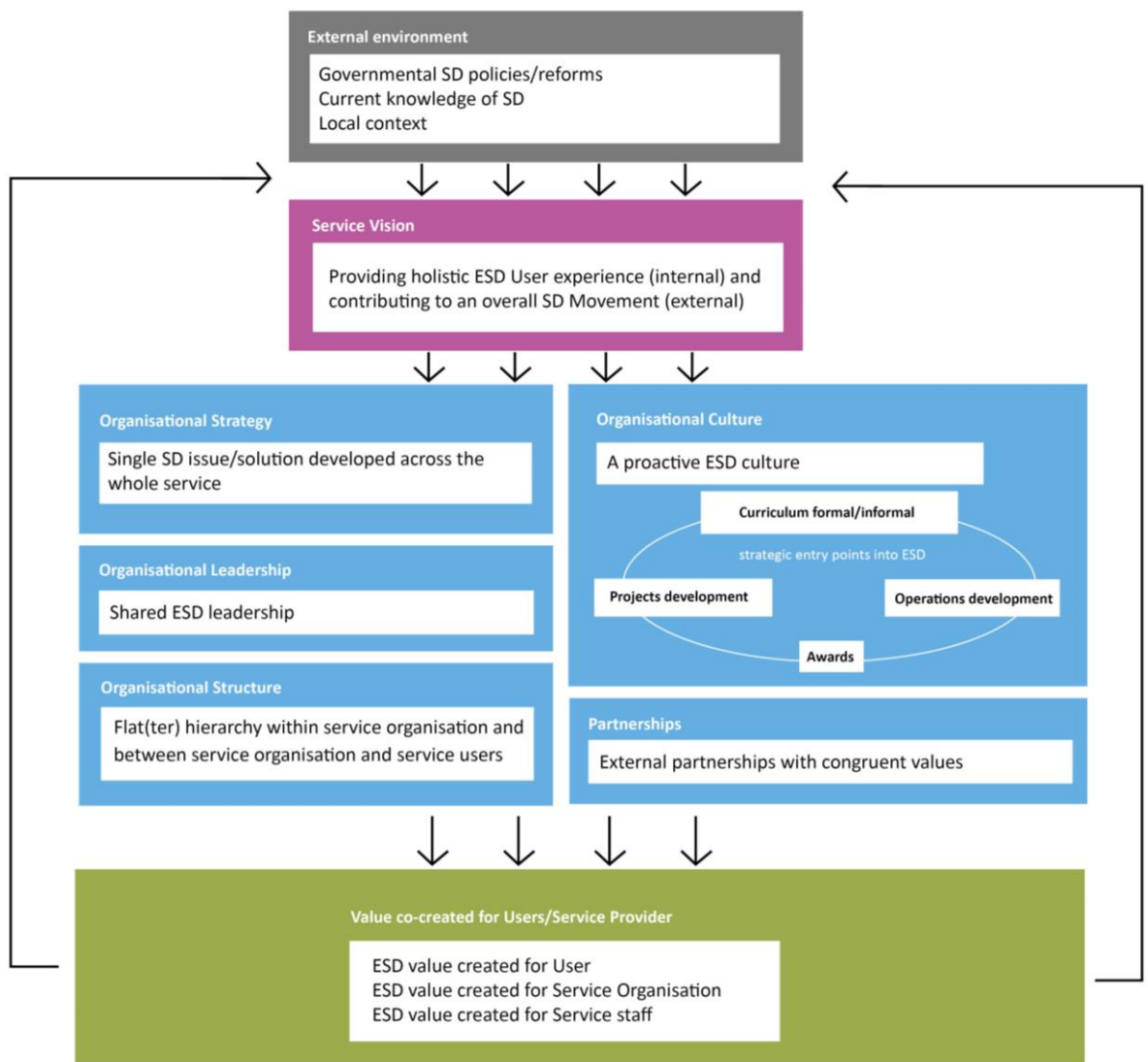


Figure 6-3: SES Model Overview

Based on the input-throughput-output-feedback theory (Liblier and McConnell, 2012) and empirical studies, the relationship between the elements can be

suggested for the SES Model. In particular, the input information assimilates from the outside of the organisation, *External Environment*, as well as from within the organisation as *Service Vision* about ESD service provision. Whilst some suggest that the external environment plays a main role in organisational change (Burke and Litwin, 1992), others also mention the input from within the organisation (Liblier and McConnell, 2012). From the empirical studies both elements provide an input into the change process, yet it is *Service Vision* which is developed internally, that has a greater impact on the change process. This is particularly highlighted in case of schools developing ESD despite the change within the governmental policies. This vision becomes an input into the organisational structures and processes including *Organisational Strategy, Organisational Culture, Organisational Leadership and Organisational Structure and ESD Partnership*, to lead to the *Value Co-created for the User/Organisation/Service Provider*. The value that has been co-created is fed back to the *Service Vision* and to the *External Environment*, which may lead to changes within the external environment and to possible readjustment of the *Service Vision*.

6.4 SES Model individual elements

The SES Model as presented in Figure 6-3 shows an overview of all the elements and the relationship between them that represent ESD within a school as a service organisation. This section defines and expands all the elements within the model and further defines the relationship between them.

6.4.1 External Environment



Figure 6-4: SES Model, External Environment Section

The external environment (Figure 6-4) within change towards ESD provides an input into the organisational vision as well as other decisions that schools undertake towards ESD. It can lead to developing ESD or become a barrier to creating change altogether. Input may come from several areas of influence.

Governmental ESD/ Sustainable Development reform – Governmental agenda about ESD varies. Governmental apathy towards ESD may negatively influence organisations, whereas a government that supports ESD may provide impetus for change as well as overall vision for what change can be. Service organisations need to be aware of the changing agenda of the government. They need to be open to the governmental support and input, while at the same time be aware of its instability and changeability. Therefore, they shall not rely on the government as the only source for developing their vision, understanding of ESD, or other support.

Current general preconceptions knowledge and understanding that exists about sustainability – The knowledge that is created about sustainability issues and solutions across the world. This knowledge is continuously developed and takes many forms, for example scientific and educational research. It helps to identify attitudes towards the issues of sustainability on a global scale and contributes to defining the direction of a sustainability movement. This knowledge influences the vision of the service and it is important to refer to it on an ongoing basis to further develop service organisation's vision towards ESD.

Local context of the organisation – Local context is an external environment that has the most direct input into the development of the service organisation and its change towards ESD. It includes the local environment as well as the local community. Local context may be favourable for the schools to move towards ESD or it may prove challenging. If the local context has a **particular characteristic, a need or a supportive attitude towards ESD it may influence and sometimes drive the ESD vision of the service.** The proactive ESD culture of the local community may also become operational in developing an ESD service. Apathy within the local

community towards ESD may be a barrier to moving towards it and may prove to be particularly challenging to do so.

6.4.2 Service vision

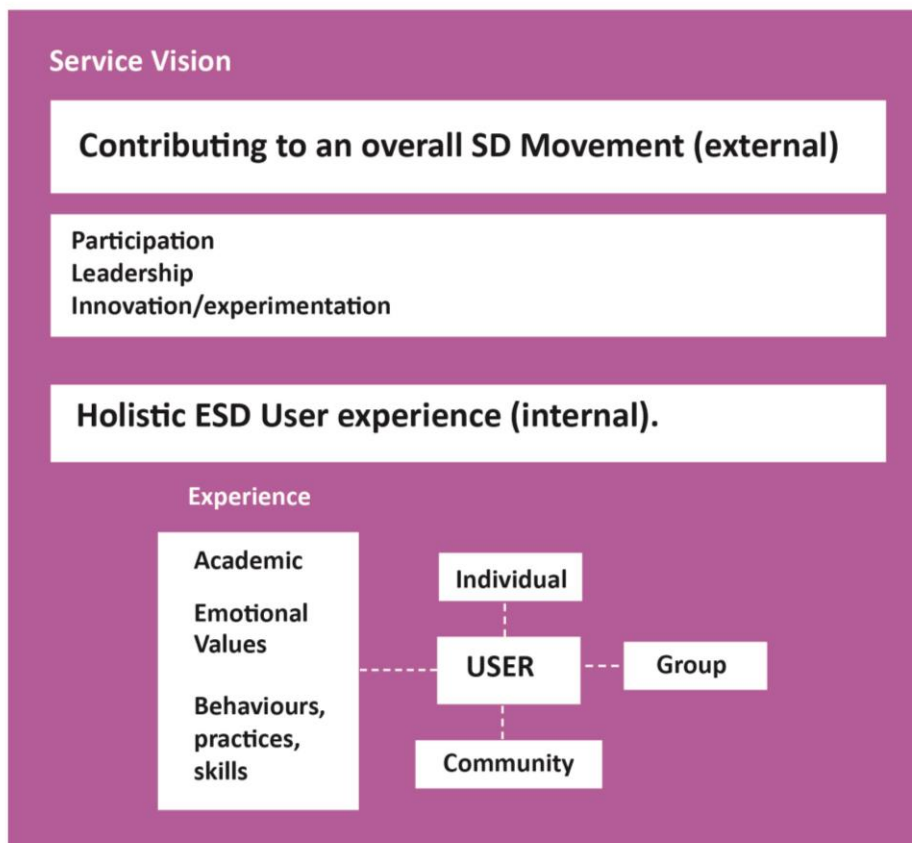


Figure 6-5: SES Model, Service Vision Section (Expanded)

From the empirical studies it was recognised that while the external environment provides input into ESD service vision, the vision is driven by two goals: contributing to an overall sustainable development movement (external goal) and providing holistic ESD user experience (an internal goal). Figure 6-5 shows how the model expands to further visualise variables that are integral to these goals.

6.4.2.1 Contributing to an overall sustainable development movement (external)

This is a view of the service organisation in relation to its role within the sustainable development movement. The main variables considered in the vision are the role that the organisation has and the scope at which it operates in relation to ESD. The role may range from a participant that is taking part in contributing to sustainability or to the leader, working in several areas of sustainability, developing real leadership in one or several areas of ESD. The vision of self may change as the service moves forward with ESD. However, it is an important element that has an impact on how proactive the service is in engaging with ESD, the scope and depth of the projects it becomes involved in. It also may influence whether the approach towards ESD is that of innovation and experimentation.

6.4.2.2 Holistic user experience (internal)

The internal vision is developed in relation to the service user, the student, and the experience that the service provider seeks to create for the user. Schools that are working towards ESD seek to provide a holistic ESD user experience. This is done by considering all of the variables that relate to the user. Variables that require consideration include user experience and user contexts. Some of the user experience refers to different domains where the user may experience the value of ESD, these include: academic or rational knowledge about sustainable development, emotional or values associated with sustainable development, behaviours, practices and skills that are associated with sustainable development. These experiences may be created in different user contexts including the user as an individual, the user as a service group member, and the user as part of the community. When a service organisation envisions developing ESD across all of the variables described above, it moves towards a vision of a holistic user experience.

6.4.3 Organisational strategy

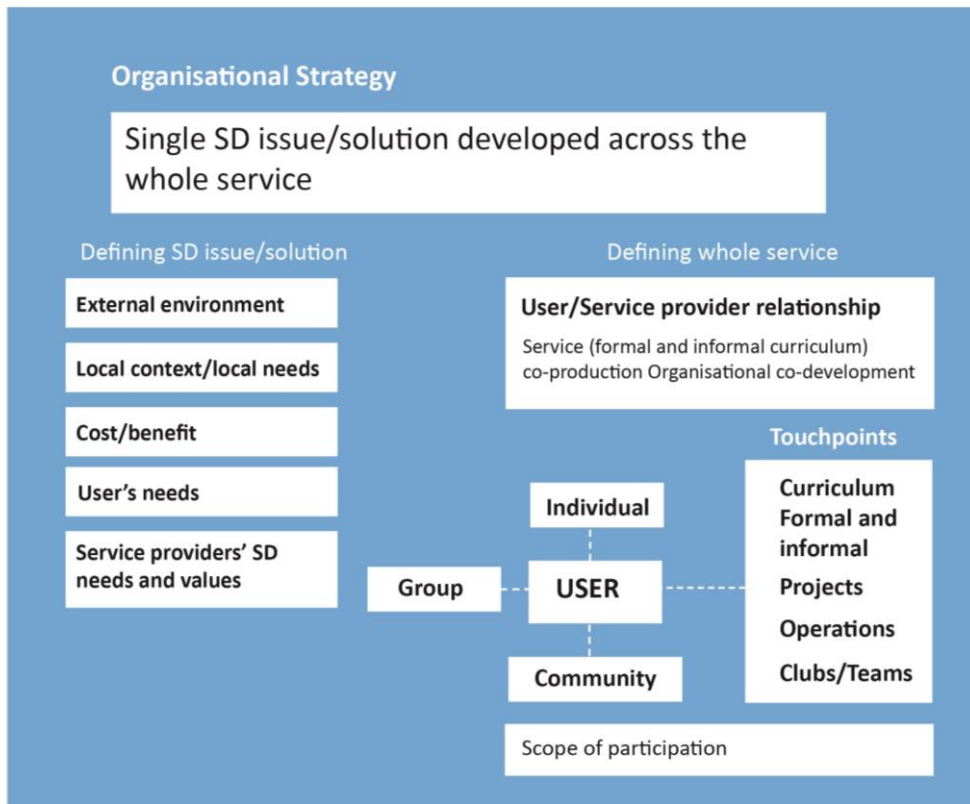


Figure 6-6: SES Model, Organisational Strategy Section (Expanded)

Organisational strategy (see Figure 6-6) is a way that the school will implement its vision to develop a holistic ESD user experience and contribute to an external sustainable development movement. From the empirical studies, schools have applied several strategies to develop their vision, however, the model presents a strategy that has been used in schools that are most engaged with ESD. This general strategy, developed by schools, considers one sustainable development issue, concept or value and seeks to develop it across the whole service. Once this has been accomplished, the school will repeat the strategy, choosing a sustainable development issue, concept or value that builds upon the previous one. The school might have several sustainable development issues, values or concepts that it seeks to address simultaneously or it may choose to do it sequentially (as seen in Figure 5-25). To develop this strategy, the school needs to consider variables that help it define **what sustainable development issue, variable or concept it will address and how it will be developed across the whole school.**

6.4.3.1 Defining sustainable development issues, concepts, values

Based on literature and empirical studies, sustainability issues, values and concepts that are defined by the schools may be driven by several variables. Some may derive from the external environment, some from the internal sustainable development issues, values and concepts that the school derives from its external environment may range from focusing on an abstract value or seeking to solve a specific issue within a local community. **Making abstract sustainable development issues, concepts, and values relevant to the local context is a strategy used by the service organisations to focus and gain relevance to what is being addressed.**

Internal variables include those that are specific to the service organisation and include an organisation's local context and needs, cost/benefit, user's needs, or service provider's needs and values. Local context/needs and cost/benefit refer to sustainable issues, concepts and values specific to the organisation's resources. User's needs derive from the ESD experience the service organisation seeks to provide its users (see Section 6.3.2.2), and the opportunities that this brings. Service provider's needs and values refers to the potential of the service staff, their personal values, skills, and motivations that could be used as a starting point to identifying an issue, concept, or value to embed into the service. The school may have more than one place to start with or some of the variables may be overlapping.

6.4.3.2 Defining 'whole service'

For the school to integrate sustainable development issues across the 'whole service', the concept of 'whole service' needs to be defined. Based on the study, it considers the relationship that is developed between the user and provider. In particular, the whole service is defined as service co-production (formal/informal curriculum) and organisational co-development between the user and service provider. To develop a particular issue across the whole service, the service provider needs to consider all of the touch-points that relate to that relationship. For the purpose of this research, the following touch points have been identified as the most relevant to ESD: curriculum (formal and informal), projects, operations,

and clubs/teams. To integrate an issue across the whole service means to integrate it across all of the identified touch-points. In addition to the touch-points, the service provider needs to consider the scope of user/service provider participation and aim for the widest scope of participation. To increase users' participation it may be relevant to consider the user as a singular individual as well as a group or part of the community.

6.4.4 Organisational Culture

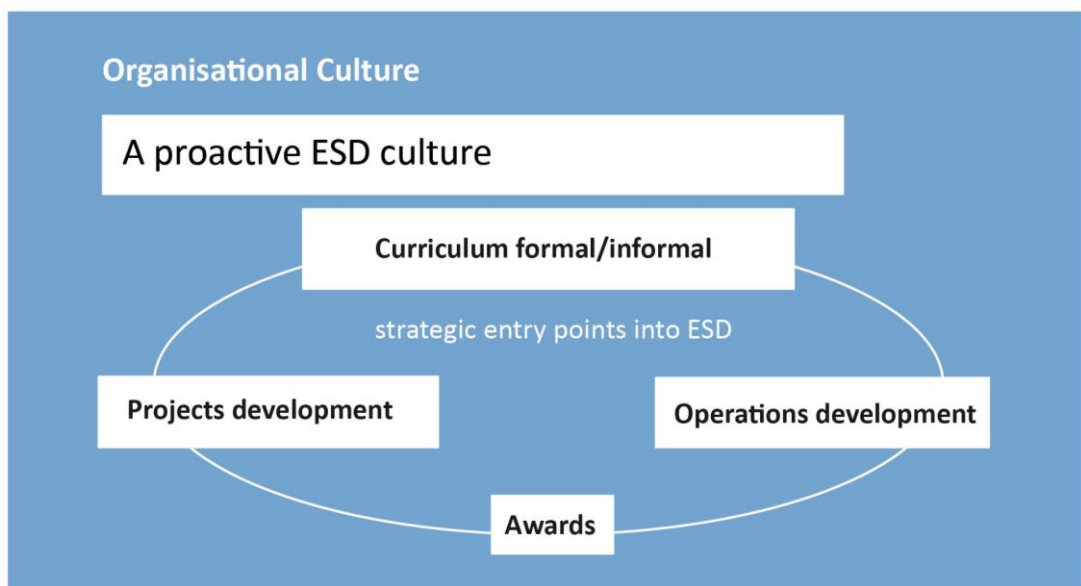


Figure 6-7: SES Model, Organisational Culture (Overview)

The implementation of an organisational strategy is reflected in organisational culture (see Figure 6-7), including the extent to which the strategy is being developed. **Schools that are most engaged may be said to develop a proactive ESD culture.** Schein (1990) defines organisational culture as a manifestation of an organisation's ongoing development and learning process. Schein (1990) notes that the manifestation of culture may occur at three levels: artefacts, values and assumptions. Based on the scope of the research, it is difficult to assess organisational assumptions, defined as *"taken for granted beliefs about reality"* (Schein, 1990). The model does however seek to represent the more visible elements of the culture, values and artefacts. Organisational values are the goals and principles that an organisation aspires to (Hatch, 1993), and these are visible in

the service vision that schools develop (see Section 6.3.2). The artefacts of the culture however are the most visible and tangible manifestation of culture, and are presented in this model as curriculum (formal/informal), projects, awards, and operations.

The model focuses on the artefacts of ESD organisational culture. It suggests that for a service organisation to start moving towards ESD it may engage with any of these artefacts that serve as 'strategic points for entering ESD'. While in order to have a proactive ESD culture, it needs to engage with all of these artefacts in an integrative way whilst developing each element to its fullest potential. How proactive and consolidated ESD culture is within a single service organisation may be measured by an inferred template of its activity. **A service organisation that has a multitude of integrated ESD artefacts that took place in the past, occur on an on-going basis, and are planned for the future, will be recognised as an organisation with a proactive ESD culture.**

The following sections explain all four 'strategic points for entering ESD' in more detail. However, only Projects and Operations development variables in the model have an expanded visual representation. This is due to the focus of the research findings and the scope of the research. In addition these two areas are least explored in the literature and therefore require greater understanding.

6.4.4.1 Curriculum formal/informal

Curriculum, both formal and informal, relates to the 'primary' service of the school and embedding sustainability issues, concepts and values into the curriculum is one of the ways that the school can implement ESD. This relates to the on-going service practices that can be found in most schools, including implementation of different learning/teaching styles and refers to the service practices limited to an individual classroom. This is an important service touch-point as it engages the widest scope of service users. The curriculum expands and starts to reflect ESD2 practices including sustainable development real inquiries when other artefacts including real life projects, operations and awards become integrated into the curriculum.

6.4.5 Projects

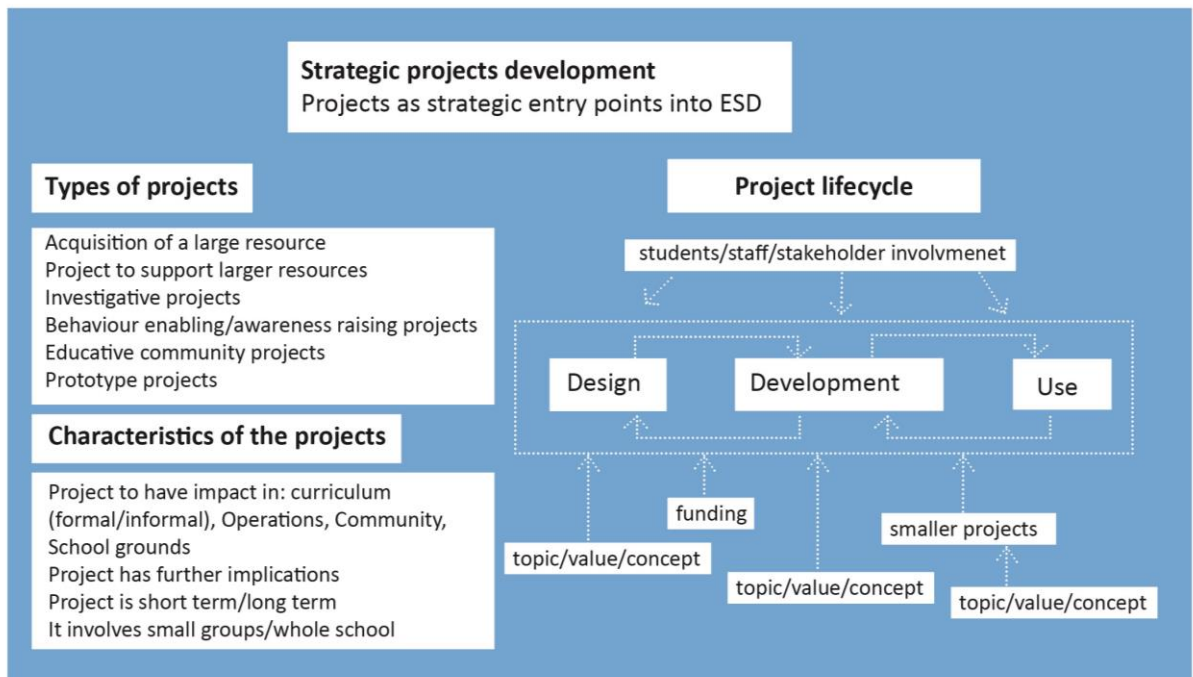


Figure 6-8: SES Model, Organisational Culture Projects Section (Expanded)

Projects are a means for the school to integrate sustainable development into the service organisation and it has potential for the school to integrate it at the ‘whole service’ level. A service that is developing an ESD project needs to consider several variables, **the type of the project that is being developed, the characteristics of the project, and the lifecycle of the project.**

As discussed in section 5.9 and illustrated in Figure 6-8, a service organisation may engage in many types of projects with different aims and life spans. Some types of projects relate to others, as one project may become an input or output of the other. Schools engaged in ESD recognise these different types and engage with them strategically based on their vision and strategy.

From the empirical study it was recognised that projects have a lifespan that consists of three stages of ‘design, development and use’. Each stage is an opportunity for the school to embed an sustainable development issue and consider the scope of the user, service staff and other stakeholders’ participation.

The model shows that each project can be developed afresh or further developed. In addition, evaluation of the project may provide an opportunity to consider how the project can be self-sustained. It is these considerations that help the service to embed sustainable development at the deepest level. In addition it recognises the need for the utilisation of resources and financial constraints that all schools, as public service organisations, experience.

In addition to the type of project and its lifespan, services need to consider other project characteristics. For example, what is the project's primary impact, whether it is curriculum, operations, community, or school grounds and whether the project integrates any of these elements on a secondary basis? Whether the project is long or short term, and what is the scope of its participants, throughout and upon its completion. This may also be considered in terms of projects' impact during its development as well as after, based on its long-term implications.

Service organisations that are deeply engaged with ESD seek to engage with the widest variety of projects (types and characteristics) whilst considering each stage in a project's lifespan.

6.4.6 Operations development

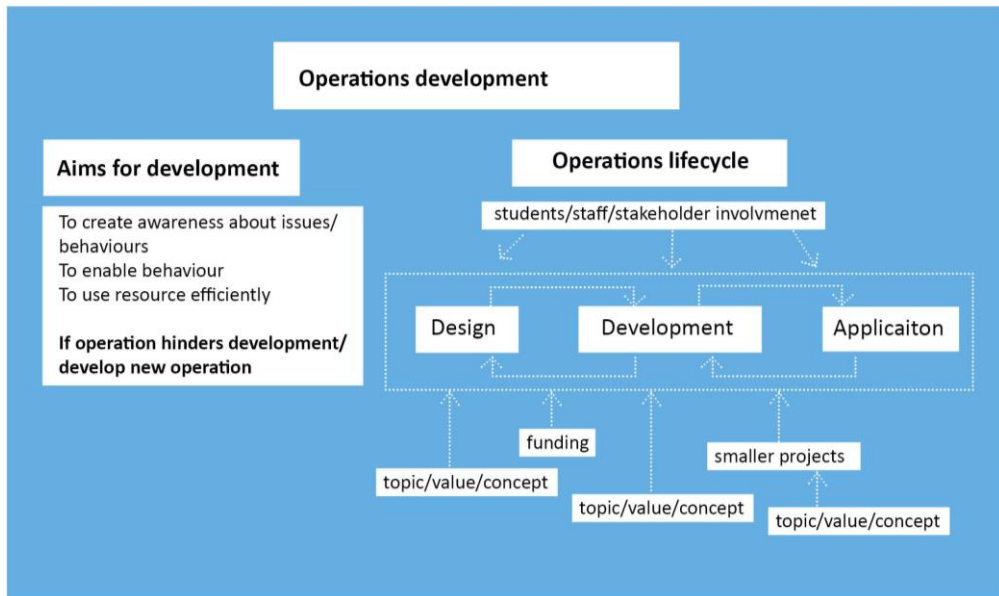


Figure 6-9: SES Model, Operations Development Section (Expanded)

Operations development (see Figure 6-9) is also a means to develop ESD in schools along with projects and curricula. Operations are related to the development of the service provider's 'back end' processes. However, as projects they may integrate the 'whole school' approach and therefore move these processes to be at the front-end of the service, becoming one of the touch points for the user. When developing an operation, the service provider needs to consider several variables including the **aim for developing an operation and its life cycle.**

As discussed in section 5.13, there are several reasons for the service provider to engage with operation development. This includes enabling a particular type of sustainable development behaviour, creating awareness about a sustainable development issue/behaviour, or becoming more efficient in the use of its resources. Schools that move towards ESD seek to incorporate several of these aims within individual operations. As with the projects, operations', development needs to correlate with the larger ESD vision of the service, for example, when considering a particular sustainable development issue. If re-developing on-going operations within the service is perceived as insufficient, the service provider may develop a new operation in order to contribute to its overarching vision.

From the empirical studies it has been concluded that operations have a lifespan. The re-development or development of the new operation needs to consider this life cycle. **The lifespan of the operation includes design of the policy, its implementation in the development of the operation, application across the service and evaluation of its success.** Evaluation of the operation against the ESD vision of the service becomes an input into further development and re-development of operation. At each stage of the life cycle, sustainable development issues may be considered, for example in the identification of the sustainable development issue that it seeks to address as well as in the development and application of the operation. Schools that work towards ESD also involve students and service staff and other stakeholders in each stage of the operation's lifecycle making it a whole school process. This is done by integrating design/development/application/evaluation of these operations as part of other elements, curriculum (formal and informal), school projects and external awards.

6.4.7 Awards

From the empirical studies, service providers that were deeply engaged in the ESD change process were also engaged with multiple awards schemes, receiving high commendation for their work in sustainability. In this model, award schemes are seen as artefacts that demonstrate the school's proactive ESD culture. When engaging with an award scheme, service providers need to consider several issues in order to establish a proactive ESD culture. The award scheme needs to consider the ESD vision of the school, the scope of the users' and other stakeholders' participation needs to be as wide as possible in achieving the award and the school needs to be proactively engaged with the scheme. The latter issue may be resolved if the award scheme is integrated with other elements including curriculum, projects, and service operations.

6.4.8 Organisational leadership



Figure 6-10: SES Model, Organisational Leadership Section (Expanded)

Leadership is a property of organisation, which is realised when one or more individuals frame and define the reality of others (Smircich and Morgan, 1982). The empirical findings from the schools that are moving towards ESD show that ESD leadership is spread between the service provider (head teacher and staff), users and other stakeholders (see Figure 6-10). The role of the service provider that seeks to move towards ESD therefore is to distribute ESD leadership within its organisation.

Leadership is defined through roles that are institutionalised as well as other social levels that can occur in the organisation such as communication, inspiration and dialogue (Bate et al. 2000). Empirical findings show that schools that are moving towards ESD seek to activate leadership at both levels and on a wide scale including service staff, users and other stakeholders.

6.4.8.1 Distributed Leadership to Service Staff

Leadership distributed to service staff considers both social and institutional levels. Distributed ESD leadership on a social level considers activating service staff on a

personal /group level. This may include recognising and inspiring existing interest in ESD, recognising and tapping into existing enthusiasm and the skills of the staff and encouraging leadership, participatory and supporting roles in ESD activities.

To distribute leadership means to not only motivate staff to act based on their personal enthusiasm and skill, but to enable them to be ESD leaders on a professional level. This means providing them with CPD and other learning opportunities, making ESD part of the curriculum planning, making ESD part of the performance management and part of the hiring process.

Empirical studies showed that distributed leadership in ESD schools requires activation both on personal and professional levels.

6.4.8.2 Distributed Leadership to Users

Change towards ESD also necessitates leadership distribution to users, which is also defined by the user/service provider relationship as discussed above. The activation of the user (at social/institutional levels) to become an ESD leader resides in the users' full participation in co-creation of the primary service as well as co-development of the service organisation. This is achieved by the service provider engaging with the above mentioned elements within the model, including developing user-centred vision and developing a proactive organisational culture.

6.4.8.3 Distributed Leadership to Stakeholders

From the empirical studies, service providers that engaged in ESD enabled ESD leadership in their stakeholders. This has been achieved through development of successful ESD partnerships. Partners involve individuals and community groups as well as institutions such as governmental departments and businesses. Schools were found to distribute leadership to these partners both through social and institutional means.

To develop partnerships, service providers need to consider several variables: purpose of the partnership, partner/service provider relationship, and congruency of partner's values with those of the service provider.

The purpose of enabling a partnership may involve sharing knowledge and resources, where the partner is a sole leader in provision of a particular type of ESD knowledge/resource. In addition, the partner may share a leading role in co-creating and co-developing a particular type of ESD resource or experience.

The service provider also needs to consider the type of relationship that is being developed between the partner and the service provider **and how this can impact the partner's leadership role.** The relationship may be one directional with the partner taking full leadership of the project, it may be a win-win relationship, where leadership is distributed to the benefit of both partners (usually non-monetary), or it may be a business relationship where leadership is also distributed but one of the benefits is a financial output.

From empirical studies, a successful partnership also necessitates a congruent set of sustainable development values between the service provider and its stakeholders. If values are congruent, partnerships are enabled through project development. However, if values are not congruent, the service provider may take on a leading role of educating its stakeholder in order to develop their values and to facilitate further partnership advancement.

6.4.9 Organisational Structure

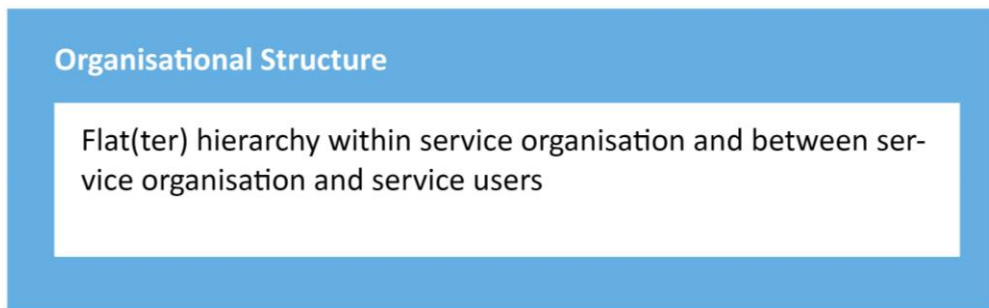


Figure 6-11: SES Model, Organisational Structure

Leadership distribution is also supported by the development of organisational structure (see Figure 6-11). Organisational structure may be functional or social. Functional structure focuses on the demarcation of positions, development of rules and procedures and prescriptions of authority (Ranson et al, 1980). Social structures emerge in organisations and are organic and fluid (Bate et al., 2000). Functional structures are more visible whereas social structures require an in-depth study. Due to the scope of this research, the model focuses on recording the functional structures of the organisation.

From empirical studies, it has been recognised that when a service provider is moving towards ESD, they consider the aim of changing organisational structure as a way to distribute ESD leadership through a flatter hierarchy. Change in functional structure requires consideration of ESD leadership roles across service stakeholders including service staff, service users and other stakeholders. The service provider needs to consider individual as well as group leadership roles and strategic participatory structures that integrate leadership roles between the user and other stakeholders. The new structures need to coincide with the overall vision and require evaluation and adaptation based on ESD development within the organisation.

6.4.10 Value Co-created for Service Users/Service Provider

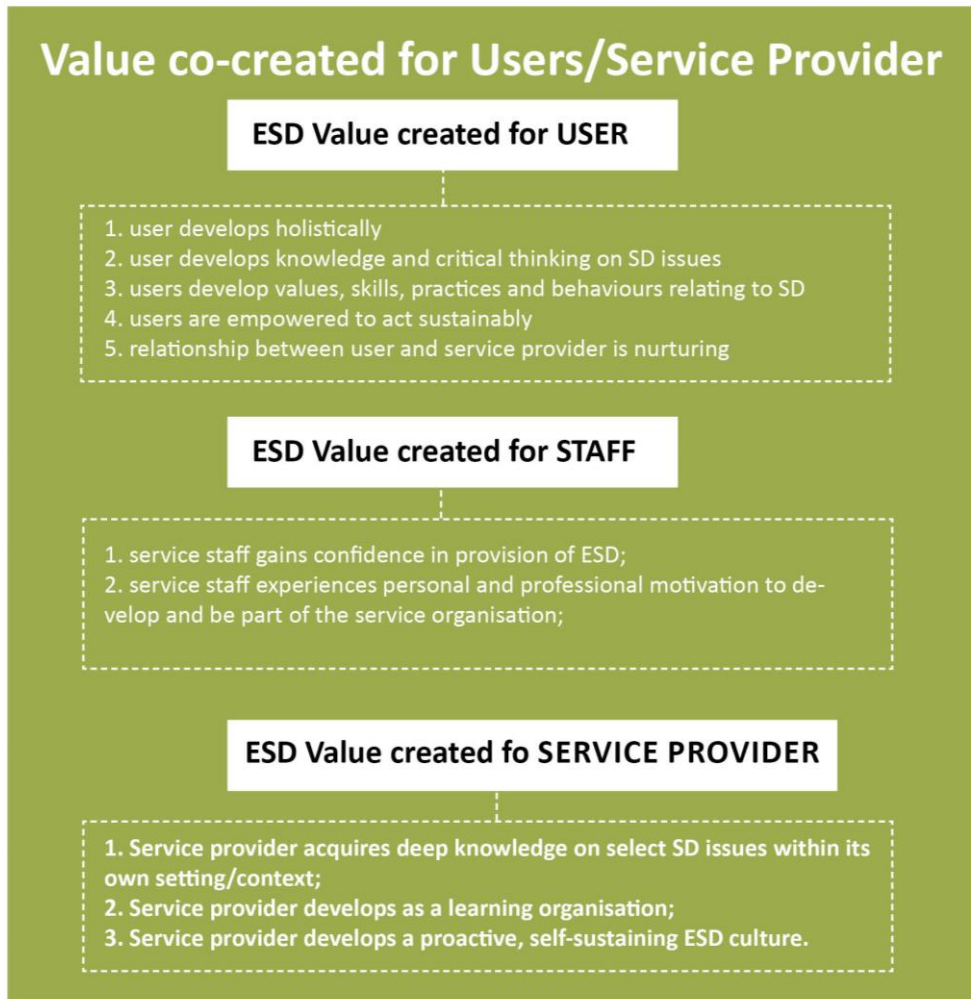


Figure 6-12: SES Model, Organisational Structure Value Co-creation Section (Expanded)

The element illustrated in Figure 6-12 of the model focuses on the outcome and achievement of the ESD development in the service organisation. The feedback from this element impacts the environment and vision development in further change processes and may be used as an evaluation criteria at the beginning of the change process.

Based on service logic of value co-creation as well as empirical studies, the outcome of ESD may be captured as: value created for the user, value created for the service organisation, and value created for service staff. The value created is an outcome of the set vision as well as the organisational learning process expressed on

individual, social and institutional levels.

The list of values potentially created for the user presented in this model is not exhaustive: users develop holistically; users develop knowledge and critical thinking on sustainable development issues; users develop values, skills, practices and behaviours relating to sustainable development; users are empowered to act sustainably; the relationship between user and service provider is nurturing.

The list of values potentially created for the service staff presented in this model is not exhaustive: service staff gain confidence in provision of ESD; service staff experience personal and professional motivation to develop and be part of the service organisation.

The list of values potentially created for the service organisation presented in this model is not exhaustive: the service organisation acquires deep knowledge on select sustainable development issues within its own setting/context; the service organisation develops as a learning organisation; the service organisation develops a proactive, self-sustaining ESD culture.

6.5 Sense-making of ESD with Service Designer

Sense-making (Ancona, 2011) refers to the process during which a new system is explored and structured by individuals for the purposes of being able to act within it. The aim of the research is to investigate how Service Design and service designers can engage with ESD and SES Model has been developed to initiate that research. It was therefore appropriate to engage service designers in the sense making process of the ESD by introducing SES Model. The sense-making process was undertaken through a 'Validating SES Model Study' with six Service Design practitioners and one Service Design academic. Table 6-1 shows general profiles of participants:

Table 6-1: Profiles of Service Designers

Service Designers	Profiles
Participant 1	Service and UX designer (USA) with 8 years of industry experience. Most work relates to social change, education and community.
Participant 2	Student experience project manager, University of Derby, last 3 years leading projects on improving student experience through Service Design.
Participant 3	Service and UX designer (UK) with 3 years of design industry experience. Most work relates to using Service Design in motivation and change of behaviour projects.
Participant 4	Service and UX designer (UK) with 9 years of industry experience. Most work relates to enhancing product/service systems through user experience.
Participant 5	Service Design academic at Loughborough University (UK). Most recent research relates to relational messages in design and strategies for Service Design.
Participant 6	Founder of a design thinking and Service Design agency (UK chapter) with 30 years of experience in design industry. Most current work relates to the use of design thinking in service management and development.
Participant 7	Founder of a Service Design consultancy in the UK, working on both private and public service projects.

During the sense-making process participants were sent a package describing the study that can be found in the APPENDIX E. The package was used to conduct in-depth interviews with each participant. The study sought to investigate whether the model was appropriately developed and whether it was suitable for service designers to use in the design process with educational institutions to move towards ESD. The study sought to:

- 1.** Explore whether the model develops an understanding of education for sustainable development as service phenomena in service designers.
- 2.** Understand whether service designers comprehend the model.
- 3.** Evaluate whether the model can be used by service designers as a tool during the

design process to engage with the educational institutions in the normative re-educative change process.

6.5.1 Understanding the holistic model

This section presents findings that refer to service designers and their understanding of the holistic model. At the beginning of the sense-making process some participants were able to engage with the holistic model more openly while others found it challenging. This meant that additional explanation was provided to the participants throughout the interviews, and their involvement with the model and the subject increased as a result of it.

6.5.1.1 Holistic model and its subject

At the beginning of the interview, participants reflected more on the idea of the model representing education as a service and not ESD. Few participants recognised that the educational institution is portrayed as a service system, and valued the attempt of the model to show it holistically. *"...Holistic nature of the model, it is good to think about it holistically.... I would affirm the value of this"* (Participant 5). Some also recognised that the model represents a particular relationship between students and the service. *"I do find your model of co-creation and participation between students and the school fascinating"* (Participant 5).

Other participants, although they understood that the holistic model shows the school as a service system, expressed scepticism at the very start of the interview. For example some were not sure whether the 'student is the main user', arguing that the model needs to reflect a variety of stakeholders. *"You talk about getting users involved, but the user community is much wider than the students"* (Participant 6). For others, the representation of the educational system on an organisational level seemed too focused. *"A school to me is not just a service organisation, there is a big ecosystem of education around it that commands what it does, so singling it out on its own, for me, does not really work"* (Participant 7).

Overall, from the initial conversations with service designers, it was evident that they are clear that the holistic model tries to show education as a service and the school as a service system with the student as the main user. And it is this understanding that led to an evaluative discussion of whether it is a correct way to represent it or not. However, it was also clear that at the beginning of the interview, very few service designers understood that the holistic model represents an alternative model of 'schooling' and an alternative user experience, that of education for sustainable development.

6.5.1.2 Contextualising the Model

Several reasons were provided as to why there was no clear understanding as to what the holistic model seeks to represent.

One of the major reasons for some participants' misinterpretation of the holistic model has been the term 'Sustainable Education' in the title of the model. Some participants have understood it as one of 'sustaining education' rather than education for a sustainable future. Participants provided several reasons for their misinterpretation.

1. The notion of education for sustainable development is not familiar to them.
2. The model and its presentation do not provide clear definition/glossary that explains such ideas/terminology.
3. The title of the model, 'Sustainable Education Service Model', where Sustainable Education was referring to Education for Sustainable Development, was perceived as a misleading title. Some suggest that this may be rectified by including glossaries at the beginning of the model.

It was also felt that although "*all the elements and information are there*" (Participant 4) the model needs to have a different introduction, a clearer 'contextualisation' (Participants 1-5, 7). It was not clear to participants what the standalone holistic model does show. "*Is it just a gaze?*" (Participant 7). "*I didn't know if you already have a school or you already testing something or you already*

have schools... You need to put an environment” (Participant 4). It was proposed to include an introduction, a short narrative, to explain the need for ESD and a need for a new model.

6.5.1.3 Clarifying ESD in the model

Those participants who were familiar with the term sustainable development felt that the holistic model does not reflect education for sustainable development enough, whilst being too heavy on organisational/service terminology. *“It doesn’t really apply education for sustainable development throughout the model, so it was not clear that it was about sustainable education” (Participant 3).* It was felt that educational and sustainable development elements therefore need to be more visible in the holistic model.

6.5.1.4 Model and its language

In addition, one participant recognised that the use of language in developing the holistic model can be a challenge. *“This is a holistic model, so language is all encompassing, but still needs to try to say what you are trying to mean, so that is a challenge” (Participant 5).* Making language more specific to education and sustainable development has been suggested as a means to making the holistic model more specific to its context. It was noted that making it clear how a curriculum connects to the rest of the organisation may rectify some of the issues.

The model was also seen to be too ‘academic’ both by Service Design practitioners and by the academics. Most participants (Participant 1- 5) felt that including case studies or other forms of illustration would bring the model to life. *“My first suggestion would be to give examples to go along, so people can actually get an understanding” (Participant 5).*

6.5.1.5 Visual communication of the model

It was also found that the holistic representation of all the elements is still too complex, and therefore is difficult to engage with. One of the interviewees suggests:

“The information needs to be presented simpler” (Participant 7). The difficulty of engaging holistically and with the whole model in general was also seen to be due to its ‘flatness’ (Participant 1). This representation seems to create a pre-defined view of the goal. Several participants reflected on how projects that happen in real life require greater “flexibility” (Participant 4), for example customers require space to create “their own agenda” (Participant 3 and 6). Participants reflected on how service designers work, and the need for a service designer to have ‘flexibility’ as well as ‘organisation’ in their projects. *“So for me...projects would have a list but depending on this or that I am doing this or that, and then I would move this and move that, it’s like a puzzle, but it has its own organisation”* (Participant 4).

Participants proposed including a hierarchy in the model. For example, it was recognised that the model has an internal process that should be followed in order to develop education for sustainable development. *“But that is your starting point, you develop a service vision first”* (Participant 3). It was suggested that this process of priorities needs to be highlighted in the model. The hierarchy would also differentiate the overall process from the individual elements that include a series of possible configurations, *“maybe think of the menu options”* (Participant 6). This should allow for the necessary flexibility in the model.

6.5.2 Understanding of the individual elements

This section presents findings where service designers engage with individual elements of the model. Interviewees went through each element, identifying the element and individual parts within it and the interrelationship between the parts. Overall, participants found it easier to engage with individual elements, rather than with the holistic model, finding them more manageable.

6.5.2.1 ‘Things to consider’

The model was perceived as a collection of elements. Interviewees defined each element to constitute parts or **‘things to consider’** during the process of change towards ESD. For example, the external factors were understood as factors that

have an outside impact on the school, are integral to the school context and therefore schools and designers need to be aware of these in the change process. *"It starts with wide environment and it is always external inferences"* (Participant, 5). Internal elements such as internal/external vision, strategy, projects and operations were also discussed. *"All this stuff with project development/operation development...is again more things to consider"*(Participant, 3).

6.5.2.2 Terminology in individual elements

Language within individual elements such as 'development of a school vision and strategy' and 'user touch-point' was familiar and participants positively responded to these organisational and Service Design terms. *"This vision and strategy for the user's different touch points, for me, it is super simple"* (Participant 4). The leadership element has been identified as a strong element and language/concepts in that element resonated with some of the participants. Participant 2 and 5 described 'activation of staff and users' as a really good term that expressed what had to be achieved.

6.5.2.3 Partnership element

Some elements generated more enthusiasm than others. The Partnership element was the most interesting element for the participants. Most participants agreed that partnership is integral part of any organisation, recognising that there is a large number of partners that an organisation could have. *"..And you cannot have only one partner, there is very rough saying in Portuguese, when you build a company you cannot just have a cow with one tit, you need to have several tits, or you will not have enough milk. So we need to have lots of partners"* (Participant 4). Some participants also recognise that 'partnership' is an increasingly important element in education as a whole in order to survive in the changing environment. *"I don't think it is possible any longer for education to be sustainable, without linking private and third sector"* (Participant, 6). It is also seen as a strategy for educational institutions to innovate. 'Partnership' element therefore has been valued by most interviewees; and few were able to recognise the purpose of 'partnership element'

in the context of education for sustainable development as illustrated in the model. *“I like this partnership. It’s not just about organisation, it is also about bringing in external partners to do things ...and by doing this together you can achieve these purposes, you can co-create some of the resources, and experiences together. I really like this box, really”* (Participant 5). One of the participants was inspired to brainstorm scenarios of school developing partnerships, *“Why not contact companies that sell composting bags, show them your project, and show how in the future kids will be more sensitive to it”* (Participant 4).

6.5.2.4 Value co-creating element

Another element, ‘value co-creation’, was also well understood by participants and its use in the change process explored. *“Again this is easy to interpret the values you are listing for three types of people involved, the user, the staff, and service provider”* (Participant 5). This element was envisioned to have a direct application in the change process. *“I can see how value a co-creation section can be put into the local context and result in solutions to that context”* (Participant 2). Others viewed this element as representing an ideal outcome/value created as a result of the change process, and suggested it to be used as **evaluation criteria throughout**.

6.5.2.5 Misinterpretation of the elements and parts of the elements

Some elements and parts of the elements were misinterpreted by the participants. The organisational culture element was interpreted by interviewees as an important element in changing the organisation. Participants defined culture as “values” and “softer side of things” (Participants 1, 2, 3, 5) and recognised that ESD necessitates change in the softer elements as well as in the material things. Although values and assumptions are part of the whole model, the culture element itself only shows the artefacts, or the visible results of the culture through which values and assumptions could be changed. This representation created misalignment in the participants’ minds and therefore confusion.

Another misinterpretation that required clarification was a specific relationship within vision/strategy. Participant 5 mistook the external/internal elements of the vision to be contrasting rather than part of the whole. *“You are picking a selection of the issues/solutions, external environment, and even looking back internally your own needs and values. I see these as two contrasting sections, is it meant to be contrasting?”* (Participant 5).

Some elements generated little interest from the interviewees, for example, the ‘structure’ element of the model. Whilst the aim of that element was clear to the interviewees, it initiated the least discussion from them.

Overall most participants were able to engage with each element and interpret its individual components. The language used in the model was relevant and resonated with the interviewees. More generalised sections were understood in relation to ‘change in organisation’ or ‘change in education’. Just like with the holistic model, only a few participants were able to connect individual elements to an overarching aim to move towards ESD. The detailed parts of the model were recognised as things to consider and therefore in line with what the model sought to communicate. The sections misinterpreted by the participants may be said to be due to the misrepresentation and miscommunication of the model.

6.5.3 Model and intended users

One of the main enquiries by the participants has been ‘the positioning of the service designer to the model’. Some participants interpreted it as a model for embedding Service Design methodology into education. Others were not sure as to what they could do with the model at all. The lack of understanding of how such a model can be used by service designers led to confusion about the model as a whole. **There was a strong argument for an action-oriented context.** *“I read it 4/5 times, I was feeling I can understand what this is, but I couldn’t understand how I can fit in this project in a context. It’s for what?”* (Participant 4). *“...that will need to be a bit clearer, to guide, just to give a bit more prep to service designer of what*

they really need to go and do to carry it out themselves" (Participant 3). Some participants proposed the need to develop the model further to be more of a *'deliverable framework'* (Participant 3) in a *'handbook style'* (Participant 6).

6.5.4 Model and its application

Several participants expressed wariness about the validity of the model if they were to use it in its current state in a Service Design project. *"I would want to know... if I was told, is this a good model to use? And I think it is..."*(Participant 6). Bringing in case studies has been seen as a means to validate the model and the research to the Service Design community. If the context of sustainable education was novel for the service designer, it was felt that more contextual information would be needed for designers to feel comfortable to work within the context. *"If you have all this information that you have here, but with valid results, pictures of children maybe"* (Participant 5).

6.5.5 Understanding the model conclusion

The majority of interviewees who reviewed the model thought it to be a valuable piece of work. There was a general understanding that the model seeks to represent change in the educational system. At the beginning of the interview, some participants derived that the change proposed is that of education for sustainable development (Participant 4 and 5). Whereas for others it became evident at the end of the interview, after the model has been closely investigated and further explained. Once it was understood that the model seeks to show change in the educational system towards ESD, it was proposed that the sustainability aspect is communicated more clearly.

Overall understanding of the individual elements of the model was higher than understanding of the integrated elements. As with the holistic model, the engagement was with organisational/service elements, whereas ESD aspects of the model were less evident to the participants.

It was also felt by the majority of the interviewees that the value of the model is in its attempt to present this information to service designers and to engage service designers in this context. *“How can we [service designers] put this model inside the education system? I think it is a pioneering space”* (Participant 4). However, if the purpose of the model is to engage service designers, then its representation needs to communicate with its intended users. Participants unanimously felt that if the model is to be applied by service designers, a format of an action-oriented framework would be more appropriate for that purpose.

Some participants reflected on their experience working within the educational context. In light of these experiences, participants felt that there is not enough knowledge in the Service Design community to engage with this context. The model was seen to contribute to this knowledge but its validity was questioned. It was felt that the model should be presented to the Service Design community alongside its research (for example, case studies). This would educate the Service Design community about the subject area as well as enable it to engage with the change process in a more confident manner.

6.5.6 Evaluation of the model

During interviews participants were able to evaluate the model’s applicability during the design process as they imagined and proposed three scenarios of how this model could be used. These scenarios were developed by participants in the middle or at the end of the interview, based on the participant’s depth of engagement with the model at the start of the interview.

6.5.6.1 Scenario 1. Using the Model to pitch the projects

The initial barrier in a real life design project, defined by the interviewees, has been to get a Service Design project on its feet. In this scenario, the service designer uses

the model to pitch the idea to a stakeholder in order to initiate an ESD project.

There are two possibilities discussed:

1. The pitch is done by a service designer directly to the school.
2. The pitch is done by a service designer on behalf of the school to the sponsor.

1. In the first scenario there is a recognised barrier of 'getting the foot in the door' (Participant 2). *"A lot of problems with the work like that is getting a person on board, if they don't come to you to say we've got a problem, you need to go to them and tell them that they have a problem"* (Participant, 3). The model is seen as a tool to communicate the value of change by showing the impact it may have on the school and the student as well as what the change process entails. It therefore allows service designers to make a 'business case', to illustrate their understanding of the system and its potential improvement. In this case, service designers are initiating change towards ESD and are pitching their services to the school or to the local government. The model is there to illustrate the change and to break the barrier between the Service Design community and educational/governmental community.

2. In the second scenario, the service designer is working for the school and uses the model to develop different projects to pitch to external organisations and therefore develop partnerships. *"You already have everything structured, you just need to make it more shiny and tell a story and then you need to have a list of people for whom you want to pitch thisYou jump from organisation to organisation, to pitch the project, with the school behind you..."* (Participant 5). The model therefore can be used as a structure from which different scenarios can be developed and illustrated. It is a tool that can be used in the co-creation stage between the school and the service designer to define aims, values and impacts. These scenarios are pitched to selected organisations depending on the aim of the project. In this scenario, the service designer uses the model to engage with the school on a participatory level. This scenario is also developed to enable one aspect of the model, school partnerships, to become reality.

6.5.6.2 Scenario 2. Using the Model to discover, evaluate, analyse

In this scenario, the service designer is hired directly by the school and works directly with a school on creating change towards ESD at a grass roots level (Participant 1, 3, 4).

The initial stages of the design process in the project are the research/discovery phase where the aim of the service designer is to understand the holistic ecosystem of the school. It is in this stage that the model is imagined to be used. *“Rather than me going in at the very beginning and looking at the holistic thing, this has already done a lot of work for me already... In that sense it would really speed up the process”* (Participant 3). Here the model is defined as an *“ecosystem and the story of the school”* (Participant 3) that is moving towards ESD. **Using this ‘ideal ecosystem’ model, the service designer begins the research stage with more focus. They are able to research for greater details based on the different elements and relationships of the model.**

Participants 3 and 4 explain that in a real world scenario, after the ecosystem has been developed the brief will be created with the client. One of the participants clearly **describes the participatory aspects of the Service Design process in such a scenario.** *“Run a series of workshops to scope out using visual methods and tools attributed to Service Design about how we should think about sustainability within the school. I would do things like use personas, think about all of us as customers”* (Participant, 7). The model would be used in the conversation with the school to discover and develop the initial brief. Having an holistic model with modular elements would allow service designers to engage with schools on a deeper level, analysing individual elements of the school whilst seeing the system holistically. *“It means the service designer can choose and go in and look at the whole thing with them [schools] or you can just hone in on areas.”* (Participant 3). Once ‘honed in on one area’, the model is specific enough to help develop a concrete brief and set of actions. *“If I am a service designer I would focus on a specific problem and in relation to that I can use this as a guide to make some decisions”* (Participant 5). The detailed view of the element shows a comprehensive set of touch-points that

interrelate and should be taken into the account. This is valued by the service designer in their decision making process during analysis stage. *“So its a good thing, about this touch-point, it makes you think if you do all the things inside these elements, if you did something without considering other touch-points, they will all be disjointed, it helps bring that to life”* (Participant 3). **The model becomes both an evaluative and decision-making tool for analysing the current situation and developing a more specific brief with the school.**

6.5.6.3 Scenario 3. Using the Model as a Brainstorming tool to develop projects

During the interviews, the model elicited different project scenarios from the participants. An example of a scenario built by Participant 5 after looking at the partnership element and its interconnection with the curriculum:

“Why not contact companies that sell composting bags, show them your project, and show how in the future kids will be more sensitive to it, and their profit will increase because they will be aware of it. Why not sponsor us to teach kids about your products? Because kids will talk about it at home with parents” (Participant 5)

Here is another example of a project scenario developed by Participant 6:

“UK school buildings if they were open all hours... they are only used 13%.. Why not multiple schools get together, reduce asset use dramatically, but operate the school on a shift based system” (Participant 6).

This scenario, based on the model, incorporates many elements that would make a school move towards sustainable development successfully, such as building a partnership in a win-win situation, developing school projects that are integrated into the curriculum, educating immediate community – the parents, partnerships and the use of the school’s resources.

These scenarios therefore are examples of a successful use of the model by service designers in the context of ESD. In these scenarios, as imagined by the service designer, the model has multiple uses. It may be used as a knowledge tool for service designers to validate their engagement in the subject area. It may also be used as a co-creation tool in the participatory design process of discovery, evaluation and analysis stages. Further the model can be used as a brainstorming tool by service designers alone to imagine and develop design-led projects.

These scenarios define the process by which service designers will engage with the tool and with the schools. In most cases, the process of engagement described is collaborative and participatory. Scenarios also define the aim of the projects and the outcome sought through these projects. These outcomes may be said to be enabled by the model. For example, scenarios include student participation, development of partnerships, and use of resources in an integrated way. These elements and their relationship are integral to ESD and to the model.

6.5.6.4 Strengths and improvements for the development of the model

As noted above, the value of the model has been affirmed by all service designers both in its development, its aim and its use and the strengths of the model as well as further improvements were suggested. The overall strengths of the model as defined by the participants are:

- It represents school system as a holistic entity.
- It shows new user/service provider relationship.
- Individual elements of the model are easy to engage with.
- Individual elements and language used in them elicit positive, action-oriented response.
- It is a valuable tool for introducing service designers to ESD.
- It is versatile and has several uses.
- It can be used by service designers to develop pitches to initiate projects with the schools and other stakeholders.

- It can be used by service designers in the initial stages of the design process in co-design process of analysis/research/ brief developing/evaluation with the schools.
- It can be used by service designers to develop design-led ESD projects.

The improvements to the design of the model were suggested by the service design participants and are outlined below. These improvements are particularly important in order to better communicate ESD to service designers and to suggest their role within it. These improvements are not listed in the priority order. The next iteration of the model should try and include all of these changes to create a tool that is clear and appropriate to initiate a conversation between service designers and schools in light of urgency to create change towards ESD. However, they are listed in order of how complex change would be (from simple change to a more complex change).

- A clear definition of the terms, possibly through a glossary.
- An introduction that will contextualise the model.
- Illustrating the model with case studies.
- Some terms and associations need to be clarified in individual elements.
- Simplifying and embedding flexibility through hierarchy.
- Highlighting ESD elements of the model (language, relationships).
- Further highlighting the user/service provider relationship.
- Developing the model further into a framework, making it action-oriented.

6.6 Conclusion

The value of the research and the model has been confirmed by all participants who expressed ESD to be a novel space for Service Design. The model developed in this chapter effectively brought service designers' attention to the change required in the school on a holistic level as well as all areas of change as defined through theory in Chapter 2 and developed in empirical studies in Chapters 4 and 5.

The successful engagement of service designers with the model may be seen in the various scenarios that describe service designers engaging with the schools and other partners in a collaborative, participatory design process **with some focus on**

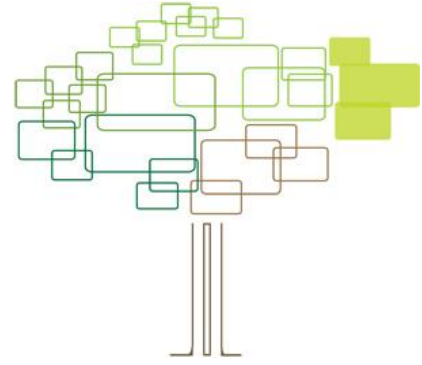
the user experience. This design process and the aims of the scenarios may be said to fill in the identified gaps in normative re-educative tools used to date and discussed in Chapter 2.

One of the main barriers identified by service designers in using the model is not its content but how it is communicated. The application of suggested improvements to the model shall clarify what the model seeks to represent and therefore elicit more clear responses from the service designers.

One of the main findings has been the need to further develop the model into an action-based framework. This is because through the process of sense-making it was clear that a standalone model was not enough for service designers to engage with on a practical level. Service designers had to understand how they are to use the model which meant that the representation of the model has to change to reflect this need. Service designers require a tool that shows them an outcome as well as the guiding process to reach such outcome.

At the same time, the model elicited several ways that service designers could engage with the model and with creating change towards ESD. They indicated possibilities that went beyond the intended use of the model but that would inevitably enhance the change process. This also opens up opportunities for service designers' involvement on a wider scale with the area of education and sustainability.

7 Discussion



This chapter integrates and discusses findings from the research in light of previous research and literature.

7.1 Introduction

This research investigated the opportunity for Service Design in Education. The focus of the research was on a particular type of change in education, Education for Sustainable Development (ESD) where Service Design has had very little presence and limited knowledge. What became evident from the review of literature was that the Service Design agenda is expanding to move towards transformational change within the public sector. Closer examination of ESD, both through literature and preliminary findings, showed the context to be an opportunity **for such expansion, as it drew links between the change that is required and Service Design approach**. The rest of the research sought to build on this opportunity. The research focused on collecting knowledge about ESD and shaping its understanding for Service Design to be used at a transformational level. The service and organisational change perspectives were instrumental in shaping this understanding and were derived from the aim of the intended use. At the end, a new model for ESD as a service has been developed and proposed to the Service Design community, **thus building its capacity to engage with it**.

This chapter discusses these processes and the questions that arose during the sense-making of the model with service designers. It discusses a series of limitations that service designers expressed with regards to their involvement with ESD on a practical level, and other topics that were found to be interesting throughout the research, including the implications of this research for ESD.

7.2 A process to understand organisational change at transformational level for service design

The literature review and empirical findings highlighted the need for a normative re-educative or transformational change within educational institutions to enable Education for Sustainable Development (ESD). At the same time literature on transformational design pointed to the need to develop an understanding of a new issue before an attempt is made to address it (Burns, 2007). To do so, Burns (2007) suggested applying 'systemic thinking' to new issues at hand, considering the issue holistically and understanding relationships as well as components in order to synthesize and frame the problem before solving it. As current literature or research in service design has not yet developed such understanding within the context of ESD, this research project has aimed to contribute to the gap of understanding. **At the same time, to the awareness of the researcher, limited work on building processes, tools or methods has yet been done to understand service organisations to enable change at a transformational level through service design.**

Sangiorgi (2011) refers to Junginger (2006) who describes "*applying user research methods [to] reveal the strengths and weaknesses of an organisation's interaction with different customers and employees. The findings can serve as the basis for redesign by understanding existing and future relationships within the organisation's network from a user perspective*" (p.10). This method has been applied particularly in Experience Based Design in the NHS (Bate and Robert, 2006). However, primary education provides constraints to such process as the user's capabilities to be reflective and therefore insightful for the purposes of a Service Design project are limited.

It has been recognised that children are an "entirely different user population" and although tools and methods have been developed in the gaming industry to involve

children in the design process as an “authentic stakeholder” (Druin, 1999: in Iversen and Brodersen, 2007), the tools do not exist in other areas of design. It may also be argued that for the purpose of this research it would not be enough to engage students as ‘authentic stakeholders’. As for this research, it was important to engage with change in ESD at organisational and holistic levels and therefore the ‘user research’ approach was perceived as incomplete.

This research engaged in an **alternative process** to establish and understand organisational change at the transformational level for Service Design purposes. In-depth case studies and cross-case analysis were carried out using a human-centred rather than user-centred approach. Case studies were undertaken with service providers and staff to understand change at the organisational and holistic levels (see Chapters 2, 3, 4 for details). To understand ESD as change in a service, service thinking was applied to the findings as a lens to clarify the relationship of different components. Using this lens allowed this process to focus on the user/service provider relationship without engaging in direct user research. Further, **organisational change theories** were applied to the case study findings as the **second lens** to clarify the areas important for transformational change within an organisation. Although the process is energy intensive, it led to a holistic model which has been perceived as a valuable input into the future work of service designers in this area.

The literature from the Service Design Research Network workshop (2013) revealed the difference in the process of designing new and re-designing existing services. It was recognised that taking time to understand the complexity and bigger picture is an important aspect of a service re-design process. **The model and the process by which it has been accomplished therefore may be seen as a timely piece of work in relation to Service Design and the context of ESD.** This was especially visible when service designers discussed the value of the model; to be holistic and the need to develop this understanding as an important step in the design research process. In addition, evaluation of the model evidenced its potential to be used at the transformational level, which further supports the value of the process.

7.3 User-centeredness, what does this mean for Service Design in ESD?

The research highlighted that for the Service Design community to be involved in ESD, a clear understanding of the intended change is necessary. Both literature and discussion with service designers shows that there is a tendency to define Service Design contribution to services, including education, as designing or re-designing the service by making it user-centred (Ng and Forbes, 2008). This is not surprising, as a large portion of Service Design research and practice has been focusing on the user-centred and co-creation tools and methods (Wetter-Edman, 2012) and using them to re-design or design new service models. The tendency of service designers to start with the user as the initial point for innovation was also evidenced during the research when participants felt somewhat perplexed about the aim of the proposed ESD model at the beginning of their interviews.

During the research it was found that user-centeredness or student-centeredness is already a part of the educational model, exemplified in the change in education from transmissive to transformative learning (Wals, 2009). However, it was also found that there are different ways of engaging the student in ESD and only a particular way of engaging the student with the service provider leads to the intended outcome. The research therefore found that although user engagement is essential, ESD provides a particular context within which that engagement shall take place. **It may be argued that where appropriate, the research about the intended change is necessary to inform Service Design practice.** This might be particularly true in cases where change in the service system is not as clear as changing towards 'user-centred' service, but where user engagement is still vital. Without such research, Service Design practice may be seen as driven only by innovation, which may lead to various issues such as lack of continuity (Hannon, 2009) or lack of impact due to inability to adapt Service Design tools to a specific context (Junginger and Sangiorgi, 2009).

7.4 Service designers and the sustainability agenda

ESD has limitations that are placed upon the service system not only by individual organisations but also by wider environmental, social and economic issues. This means that change towards ESD is within the remit of the sustainability movement where service designers have been engaged on the periphery through specific individual projects such as in Dott07 initiatives (Thackara, 2007). However, research found that in general sustainability is still “a bit of red herring” (Participant 2) to the Service Design community, although the subject is recognised as important. These statements from Service Design practitioners contrast with an overarching thought that the design community is moving towards a better understanding of sustainability and understanding of how the design community can respond to it (Chick and Micklethwaite, 2011).

On one hand, service designers feel the issue of sustainability is complex and there is little knowledge in the Service Design community on the subject matter. The Service Design Research Landscape Map (SDR UK, 2013) illustrates the overlap between Service Design and sustainability to be in one area of the Product Service System (PSS). This space is scarce and is populated by the work of those in sustainable design (Hernandez Pardo et.al, 2012) rather than Service Design. The intention of this research therefore, is to contribute to the knowledge base for service designers in the area of sustainability through ESD. It also opens up opportunity for further research to develop the Service Design field to reflect the needs of the new subject area.

In addition, although designers are leading sustainability in various ways (Chick and Micklethwaite, 2011), a discussion with service designers reviewed the assumption that all designers are ‘change agents’. *“I am not yet convinced that ... service designers, are change agents. I think there are a lot of people who just enjoy designing a good user journey or interface”* (Participant 6). Research found that service designers feel more comfortable with such terms as ‘change’ and ‘innovation’ as defined in collaboration with the client rather than promoting their

own agenda. At the same time, it was also suggested that service designers are malleable and the broad application of Service Design to a multitude of contexts means that service designers just need to be steered and engaged with the agenda. *“What Service Design is good at, whatever the change you decide to do, to focus your Service Design community around the scope of people that they need to engage to actually make that change happen”* (Participant 6). Examples of ‘movements’ within Service Design could be exemplified by such networks as Design for Social Innovation (DESIS). This research is seen as an attempt to further develop awareness of change towards sustainability within the Service Design community.

7.5 Service designers and change in education – a practical outlook

Discussion with service design practitioners revealed the challenges and opportunities of using the model in Service Design’s real world projects. In particular, one of the main questions being asked is whether a Service Design practitioner has space to get involved in such projects. This discussion is rooted in the scope of change that the model presupposes and the potential impact of this change.

Findings from the research suggested that the type of change necessary for the schools to move towards ESD had to occur at the organisational level (see Chapters 2, 4, 5). The SES Model therefore was developed to show what ESD change at an organisational level is and to enable service designers to participate in creating change at such a level. The discussion with service designers revealed the difference in the ideals that service designers may have and the practicality of real life projects. It was recognised that the model shows innovation and change at the grass roots level. Grass roots and bottom-up change is well positioned in the literature on sustainable development, as it enables organisations to respond to the local needs and values of the communities involved (Seyfang and Smyth, 2007). All participants agreed that grass roots change is an important type of change. *“I really believe in it, and I am a huge supporter of a grass roots approach”* (Participant 7). It

can be a positive development within individual environments and it has been viewed as a way to create a cultural change within organisations.

And yet, service designers are limited by the opportunities of the system within which they operate. Participant 7 reflected that grass roots level projects, that would result from the use of the model, are energy intensive with little profit and stability, making such scenarios unrealistic for the service design practitioners who would usually work in a medium-size consultancy. This reflects the current climate within which Service Design consultancies work and where they are struggling to survive and to engage with projects for social change, especially in the public sector where there are multiple limitations, including budget cuts. There are examples of design organisations such as the Innovation Unit (Hannon, 2007) who began their work as a response to the need for innovation within the education sector, funded by the government, but failed to sustain itself in the long run. As a result, the Innovation Unit spun-off and became independent of governmental funding, expanding into other areas of the public sector (*ibid.*). Another design consultancy, Snook, also found itself expanding into the private sector after realising the financial challenges of working for the public sector.

The change presupposed by the model would happen at an organisational level. Changing one educational institution at a time leads to incremental change when change is contextualised within a larger system of education. This poses the question; who within the educational system will be procuring Service Design services? The challenge in this situation is that for service designers to work at the grass roots level as proposed by the model, a direct relationship between the service designer and the school needs to be established. However, the most recent report on trends in educational spending in the UK shows that besides day-to-day spending on teacher pay and consumables, most of the school spending has been in areas of new build and ICTs (Chowdry and Sibieta, 2011). Schools therefore do not show a habit of spending a lot of money on innovation programs or projects. The report also projected cuts in the educational sector for 2014-2015, which have been taking place in recent years, in addition to the funding being transferred directly to

the schools, making them more autonomous in their spending (Gov.uk, 2013). It therefore may be projected that schools being more autonomous in their spending may not have the capability or motivation to spend their money on innovation in the current economic climate. Participants drawing on their personal experience suggested that this situation means schools will not be hiring a Service Design consultancy directly to engage in a design project. *“We wouldn’t be procured to work in a school by a school”* (Participant 7). *“Each individual school will have budget devolved to them and it is up to them where they use it... those schools are choosing not to spend that budget on schools development”* (Participant 6). These issues have been brought up as a reflection of the current environment that service designers are working within. In light of these issues, two questions have been raised. If Service Design consultancies currently are not placed to engage with educational institutions to bring about change on a grass roots level, where and how should service designers be positioned to become involved in this change process? This reflection led to several propositions. **New spaces should be proposed for service designers to get involved in creating change within education where service designers are seen as a stakeholder.** Some examples proposed by the interviewees included developing hubs and partnerships with the local authorities and educational institutions. *“I think a radical form of innovation that has to be perhaps a different model... we have to take a partnership-based approach, in the local area, so that is what we are writing up at the moment. To get people to use Service Design to think about, not necessarily about sustainability, but about innovation in education, and providing the best service”* (Participant 7). In this model, the government funds the projects and schools are stakeholders bringing their expertise to the table. This proposition reflects the need for ‘better commissioning models for design’ expressed by several authors of Design Commission and Nesta (Design Commission, 2013 and Mulgan, 2014).

Another space for service designers is within public institutions as experts in creativity and strategic innovation. This means moving away from a model of hiring Service Design consultancies, to the model of a governmental body and/or educational body creating a Service Design position within it. This is another timely

proposition that reflects current recommendations of Design Commission to the government, as well as the design community. For example, one such recommendation reads “*department leaders must create career paths for social and Service Design professionals in public service work*” (Design Commission, 2013: 17). Further, the Commission states that this issue relates to all designers who have an interest in working in the public sector and that there are very few opportunities to do so.

Another question brought up for a discussion by participants was whether the aim of the research is to propose change towards ESD as a space for **Service Design professionals** or **people with Service Design attributes/tools**. Both possibilities have been discussed, and the first relationship is talked about in depth in the above mentioned sections. However, if the latter intention was true as well, it would open up space for knowledge transfer between service designers and those in the educational system. “*So we can start getting design methods into those kinds of organisations*” (Participant 7) “*so they can make changes for themselves*” (Participant 6). Service Design may become part of staff’s CPD. This relates to the notion of the school as a ‘self-empowered organisation’ in managing their own change process.

7.6 Visual communication an important aspect of Service Design knowledge acquisition

One of the limitations experienced by the Service Design practitioners at the sense-making stage of the research was the participants’ ability to engage with the model at the very beginning of the interviews. Designers found the model to be highly academic and asked for a more visual representation, supplemented with case studies. This limitation highlighted the importance of visual language in the development of new tools and methods for service designers. It is well known that one of the primary principles of service designers is to visualise the intangible aspects of services and visual language is an important element of service development and design (Segelstrom, 2010). However, it is not always clear what

this means for the service designer's knowledge acquisition. Research developed by Lieberman (1995) found that for graphic designers, a knowledge acquisition system needs to have graphical interface and be example based. Research by Lofthouse (2001) and Escobar-Tello (2011) further identified this to be important for industrial designers. Findings from the research concur with these statements. The visual communication of the new method or tool is vital for service designers to successfully acquire knowledge about a represented entity. However, providing case studies and examples as requested by service designers and identified by research, is challenging. In particular, the fear is to limit the design outcomes by pre-defining them in advance through examples.

7.7 Service designers are action oriented

A characteristic of service designers being action focused has been also highlighted during the sense-making stage of the research. In particular, after engaging with the model, service designers (both practitioners and academics) were asking 'what can I do with this?' This question reflects Jones' (1992) definition of a design approach to focus on activity, developing artefacts and prototyping. It was clear that service designers were less interested in understanding the new context of a system for the sole purpose of understanding it. They were however interested in understanding how they can take part in it, participate and engage with it. For this research, this finding implies that the development of the model into an actionable framework is further needed. However, if as discussed previously, to engage service designers in ESD a greater understanding of how this can happen is required, then this model is the first step in building knowledge and the capacity of service designers to engage with the research within the field.

7.8 Value of content based models in the service design process

The above mentioned section also begs the question about the value of the models that are developed for the purposes of design. The model developed during this research involved an in depth study of a particular context where service designers have very little presence both through research and practice. The model seeks to

show a particular state of a phenomenon as a general solution, the 'goal' of a change process in a system. The model takes a holistic view of the system showcasing its complexity while staying general enough providing space for innovation. This model can be defined as a content-based model. However, when the model was shown to service designers they expressed the need for an action-orientated model. This preference for the action-based models and rejection of content based model supports what Young identified as designers' preoccupation with models that focus on 'know how' knowledge of design process rather than 'know that' knowledge of design content. This research seeks to contribute to Young's argument (2008) that content based models are a valuable and important contribution to the design practice as are the design process models. Young identifies content based models as a useful tool in a process of socially complex change where designers engage in designing contexts rather than designing in contexts. Content based models allow for better understanding and debate of how complex a particular situation is, allowing for designers and other stakeholder engagement, and identifying where and what design processes are appropriate for addressing identified issues. The findings of the research during sense making process of the content model in the thesis provide an illustration of such decision making and discussion by designers despite their initial lack of comprehension of value that the content based model may possess.

During the sense making process the model was contextualised in four scenarios, where each scenario presupposed a unique process with its individual techniques and methods. Young notes that the effectiveness of 'know how' and 'know that' knowledge requires triangulation, meaning that designers need to have knowledge on how to navigate the content and how to identify the appropriate set of processes and methodologies to lead an effective change process. From this it may be concluded, that this thesis is only a starting point to engage service designers in changing education towards sustainable development. It seeks to develop a model that contributes to designers' 'know that' knowledge of sustainable education. It achieves it at a level of a singular organisation, therefore, there are opportunities to add and expand the content of the model, for example looking at levels of policy

making. In addition there is a need to engage with ‘know how’ knowledge, which is an opportunity to research and develop a variety of action-oriented models that can be used by designers in each identified scenario. Lastly, designers need to be able to differentiate between various scenarios, and tools and methodologies to navigate the content of sustainable education to identify when and how to engage with it is required.

7.9 SES MODEL an expansion of WHOLE SCHOOL APPROACH

MODEL

The use of Service Design thinking (including Service-Dominant logic, systemic thinking and user-centeredness) when applied to findings from the case studies and literature, enables a new model of the school that is engaged in ESD. This model expresses a particular relationship between the school and its user, service co-production and co-development. The model focuses on the user experience while considering the integration of all the elements of the school as a service organisation. This service view is new within educational literature and may be said to be an expansion of the whole school approach model developed by Shallcross (2005) and recognised by the ESD community (Henderson and Tilbury, 2004).

The whole school approach model “integrates pedagogy with the social/organisational and technical/economic aspects of school practice” (Shallcross, 2005: np). This school-focused model has been further modified by Expertnet (Mathar, 2013) to highlight circumstantial factors (external and internal) that influence schools on a daily basis. Stone (2007) uses the whole school approach to rethink a specific school area – students’ lunch. What is evident in these models is the focus on the integration of the school’s elements, including teaching and learning. However, whilst ESD literature refers to the importance of the whole school approach in the emerging learner-centred practices (Henderson and Tilbury, 2004) and enabling responsible citizens (Scott, 2011), the **learner is only an implicit asset within these models**. This is further supported by the case studies findings,

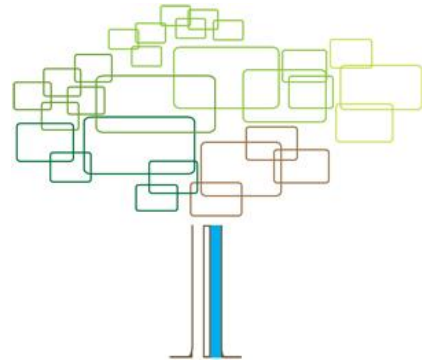
where integration of the learner in schools' ESD development is based on the school's staff tacit knowledge about what such integration requires.

Yet, research found that there are two types of user integration needed to develop ESD, but schools are not aware of these and therefore a wide variation of user integration within ESD can be found across the schools. **The SES Model uses service thinking and user-centeredness to understand and codify the relationship between the learner and the whole school, making such knowledge explicit.**

Codifying and making knowledge explicit makes it easier for an organisation to recognise, share and manage such knowledge (Haldin-Herragard, 2000). The SES Model therefore brings attention to learner/school integration, enabling schools to share this knowledge amongst the stakeholders and therefore further enabling a whole school approach. The model may also support future school improvement based on learner's experience as a basis for transformation – a recommendation for ESD development by UNECE (UNECE, 2014)

8 Conclusion

Chapter



This chapter brings together all the areas of research into a general conclusion, showing how the aim and objectives of this research were met. It suggests a contribution to knowledge, experienced limitations of the study, and suggests opportunities for future work.

8.1 Meeting the aim and objectives of the research

In this research, the influence of Service Design on public service development has been recognised. In particular, it was acknowledged that Service Design has been expanding from an improving service offered at the periphery of public service organisations to re-defining models of public services from within the organisations as a response to the increasingly complex issues of an economic, social and environmental nature. One of the areas in the public sector that is currently undergoing a shift, but has seen minimum engagement from Service Design, is education. In the last decade, education has been experiencing a change towards sustainable development, as indicated by the UN Decade of Education for Sustainable Development (2005-2014). The vision for change has been set out globally and presupposes a transformational shift in thinking, values, teaching and learning processes. However in England, change in the education system has been very slow and incomplete, suggesting opportunities for new approaches.

The aim of this research therefore was to demonstrate the potential of Service Design to contribute to a change of educational services in England towards ESD. As no prior work has been carried out in this area, the research sought to first find theoretical grounding from which to continue further. This was done by carrying out

a literature review and positioning Service Design as a possible holistic, outside-in, normative re-educative change process within ESD. The literature review also showed that there is a gap in knowledge as to what ESD change at normative re-educative (or organisational) level is. To fill this gap, a comparative study with five cases (primary schools) was undertaken. The review of literature also pointed to the need to engage with ESD, not as change in the educational process, but as change in a service, making it more relevant to Service Design. As a result, findings from the study, service thinking and organisational theories informed the ‘Sustainable Education Service Model’ which represented ESD as change in a service system at an organisational level. This model was used as a tool in an exploratory study with service designers to explain and to engage them with the ESD concept. The study helped to assess the potential of Service Design as a holistic normative re-educative change process in ESD and to define opportunities to enable it.

Table 8-1 : Attainment of Aim and Objectives For This Research

Objectives	Ways in which objective was achieved	Chapter reference
1. To critically review literature around the concepts of ESD, the current state of change processes towards ESD in the English primary educational system and their relationship to three planned change strategies of human systems, transformational change and Service Design approach.	This was achieved by carrying out an extensive literature review. The review identified a potential relationship between Service Design and ESD. Service design was defined and its expansion into organisations at a transformational level was recognised. Service Design was aligned with normative re-educative change. An ESD phenomenon was explained and approaches to change undertaken in practice in England by primary educational institutions were reviewed. The need for a normative re-educative approach was defined and gaps in existing tools that seek to enable ESD at such level were inferred. This provided grounding for development of further research.	Chapters 1 and 2
2. To develop understanding of ESD as change at an organisational level.	This objective was achieved by carrying out a comparative case study with five primary schools. The study comprised of two stages. In stage 1 case studies were developed. Methods used were in-depth interviews, questionnaires, and unobtrusive measurements. During stage 2, a cross-case comparative study was done. Findings from both stages provided insights into	Chapters 4 and 5

	organisational change towards ESD on a holistic level. These included organisational elements of culture (including personal values of individuals and organisational ethos), structure and leadership, approaches to ESD, motivations, and barriers. The results informed the development of the SES Model.	
3. To engage service designers with the ESD concept as a service at organisational level.	This was accomplished by applying service thinking and organisational change theory as a lens to analyse and reformat findings from the case studies. This led to the development of the SES Model. The model was presented to service designers to introduce and engage designers with the ESD phenomenon in a service system at an organisational level.	Chapter 6
4. To define opportunities for Service Design to enable ESD at an organisational level?	To achieve this objective, in-depth interviews with seven service designers have been carried out. During this stage, the proposition for service designers to engage with ESD at transformational level was assessed and further opportunities for enabling it were discussed.	Chapters 6 and 7

8.2 Overall conclusions

During this research a link between Service Design and a new context of Education for Sustainable Development was proposed and explored, leading to several emerging relations. Throughout, the needs of both areas have been recognised and brought together developing a mutual relationship and informing each other. First, the aim of Service Design to work at a transformational level of organisations and the need for educational institutions moving towards ESD to change at normative re-educative level was recognised. Second, the appropriateness of the process that Service Design can provide to individual organisations aiming to change towards ESD has been established. Third, the system that requires re-design was explored in detail. What needs to be changed was defined and linked to the type of change that Service Design is involved with. Lastly, the opportunities for Service Design to engage with change in practice were considered.

The exploratory nature of this research led to interesting conclusions that can be found throughout thesis. However, some of the key points are discussed below: The first link proposes theoretical reasoning for why Service Design should be involved

with ESD. Change strategies used in English educational institutions to move towards ESD were reviewed and a gap was identified at a normative re-educative change level. This conclusion led to the examination of some existing tools that aim to engage schools at such a level and point to their limitations. One of the main issues was that no tool considered all the necessary elements for ESD change to take place within a school. Another issue was that they presuppose that schools will initiate and drive change towards ESD voluntarily. This finding contradicts conclusions from the literature pointing to the need for the outside-in approach to ESD, being participatory in its nature and enabling change at an organisational level which includes both social and individual values. These findings are linked to Service Design, which has an outside-in approach that enables change, and its tools and methods support the participatory and collaborative strategies that are integral to a normative re-educative approach. It also linked it with an aim of Service Design to expand its impact on the transformational level in organisations. Overall such a conclusion is based on expanding opportunities for Service Design as it moves away from the usual 'user-centred approach' rhetoric.

However, generally user-centred rhetoric provides guidance for service designers when they engage in a re-design of a public service. Unfortunately, this guidance was missing from ESD and Service Design literature for this context. Due to this gap in knowledge, it was important to explore a new service system that needs to be designed.

This exploration first occurred by developing an in-depth holistic understanding of ESD at organisational level across five schools. Some interesting findings were revealed during this stage. One of the main findings was that ESD was perceived by all schools as an improvement strategy. However what it meant for each school and the motivation behind engaging or willingness to engage with it varied from case to case. In addition, it was concluded that there is no one way to move towards ESD, as it is based on, among other things, how schools define education and sustainable development, their local contexts, and needs. This supported the notion from the literature review that ESD is unique to individual schools and an argument for a

participatory approach to its development. At the same time, it became evident that more sustainable schools showcased an approach of defining sustainable issues to address and aimed to do so whilst integrating all components of the school. This finding reflects the 'whole school approach' theory. However, during the research an in-depth understanding of what this means for the school became possible. In particular, it became evident that more sustainable schools had defined visions of ESD and were engaging with a series of projects and stakeholders to bring these visions to reality. It also became evident that it is the level of integration of the school elements and individuals within the school (staff and pupils) in relation to a sustainable issue that differentiated more sustainable schools from the others. Lastly, the study highlighted that alignment of organisational and personal motivations in relation to ESD enabled continuous involvement with ESD. Overall characteristics and an approach to a sustainable school were defined but it was concluded that change towards ESD is an on-going process for all schools, as integration of all elements and full alignment of personal/organisational values is an aim rather than a reality. Most barriers mentioned by organisations that were least involved with ESD were mostly overcome by the schools that were involved in ESD. This means that becoming involved would help schools to overcome initial barriers.

From Service Design literature it was unclear how findings shall be presented for the purposes of service designers in order to engage with the context and assess the plausibility of their involvement with ESD at a transformational level. The model was chosen as the most appropriate format (Chapter 6). Its development was guided by the purpose of the model and by what it sought to represent rather than by external agreed steps in literature. As a result, service thinking and organisational change theory were used as a lens to configure findings into a service system at organisational transformational level. The process itself is unique to this research. Application of service thinking rather than user-centred thinking was used to encourage a systemic/holistic view of the findings. However, it also showed how user-centeredness is at the core of ESD. In particular, it revealed a relationship between the service and the user to be of co-production and co-development. This clarified what user-centredness means for ESD. Overall, the SES Model reflects the

whole school approach model, further develops it and places the student at the core of it, while showing how other elements link to the user. In addition, it further links ESD with Service Design by illustrating how ESD as change in a service becomes more user-centred.

Findings from the research carried out with service designers illustrated that Service Design is capable of being used with schools at a normative re-educative change level. They also demonstrated how the model was instrumental in introducing the ESD phenomenon to the designers. In addition the model itself was assessed as a valuable tool to the designers if they were to engage in the design process. This was an additional value that was not anticipated when the model was developed. It was also found that while theoretical propositions for linking Service Design and ESD is there, some of the barriers to engage with such work in practice are based around the Service Design profession.

Overall the aims and objectives of this research were fulfilled. Research showed how Service Design and ESD are linked, extending the context within which Service Design can operate, as well as developing the argument for the need of Service Design to operate at a transformational level within this space.

8.3 Contribution to knowledge

Different contributions to knowledge were realised during the process of this research. ESD as change in a service has not been yet recognised and therefore this approach provides an innovative way to view the problem space. Thus, the new problem space was proposed as a new context where Service Design can make a strong impact. Support was developed to show why Service Design is relevant to this new context, how it could be implemented, and a model was developed that could be used as a tool for the purposes of Service Design in ESD. Research therefore places ESD on the map of the Service Design landscape, adding and expanding Service Design's potential impact in public services.

The proposed contribution of Service Design in ESD is at the transformational level. However, Service Design has only recently been moving to work at such a level with limited work on processes, tools or methods to understand service organisations. Therefore, it may be suggested that the process undertaken during this research: carrying out case studies and cross-case analysis, developing a model through service thinking and organisational theories, can be seen as a contribution to Service Design work at this level.

The model that was developed during this research is another contribution to Service Design. The value of the model, which includes its various applications, has been assessed by service designers: to understand the phenomenon holistically, to use it in the design process, and as a means to build partnership between designers and educational institutions.

In addition to contributing to Service Design, this research may also be seen to contribute in the Education for Sustainable Development area. In particular, there are very few studies in understanding ESD vision in practice in the UK. Individual case studies in this research provide rich data and descriptions of ESD in practice. In addition, the comparative analysis sheds light into approaches, barriers and motivations of engaging with ESD at both an organisational and holistic level. This information builds upon and expands the limited research that currently exists.

Finally, the new relationship that has been revealed by this study between students and schools (service co-production and co-development) is a novel view for perceiving ESD. The SES Model is proposed as an extended whole school approach model, which is built upon this new relationship and focuses not only on the description of 'what is' but also 'how it can be enabled'.

8.4 Limitations of the study

During the research, several limitations were experienced. The first limitation was the scope of the research and the novelty of the areas researched. The aim of the research to explore possibilities of Service Design in ESD is very wide. At the same

time, both areas are new and therefore had limited previous research. Therefore it was important to explore both areas in depth before the research aim and objectives became clear. The lack of extensive prior research impacted the type of research undertaken. The lack of clear direction also meant that the researcher spent a lot of time searching for one. This further had an impact on time spent in other areas of research.

In addition, sampling schools was unclear due to vagueness of the ESD concept. It was important to engage schools that were moving towards ESD while being open about the definition of what ESD means. The use of the EcoSchools accreditation list had a possibility of schools being limited to understanding ESD in terms of EcoSchools program. However, it was found that although the program had some influence on schools' notions of ESD, it was usually one of many factors rather than the only influence. Access to schools was limited due to their unresponsiveness and busy schedule. This influenced the amount of cases that were selected for the research. This also had an impact on the sampling strategy of staff for the questionnaire, where the response rate was about 30% for each school. Although a wider response may be desired, responses included various staff members, which meant the data had some organisational representation, while the amount of responses showed some consistency across the schools.

The model developed during this research showing ESD as a phenomenon of a service system at an organisational level is limited by the context and methodology of the research.

8.5 Future work

The research argues for the potential impact that Service Design can have on education especially in ESD, opening up a set of opportunities for new research and work. In particular, in this research links developed between the two fields continues to stay hypothetical. Therefore there are opportunities to take this

further into practice and develop a better understanding of whether Service Design can have an impact on changing education towards ESD.

As the feedback from service designers demonstrates during sense-making stage, the model developed in this research could be developed further into a more actionable framework. The framework can be used in the field to further explore and expand the capabilities of Service Design in re-designing service organisations at a transformational level and towards a more sustainable future. Longitudinal studies may be designed to evaluate the impact of Service Design in this field.

Also, as the discussion chapter demonstrates, one of the barriers for service designers to engage in education is the lack of established 'spaces' where such work can take place. This leads to two prospects for further research: 1. Developing 'space' for Service Design professionals in education and in ESD; 2. Embedding Service Design practices in education with the aim of moving it towards ESD.

Further, sustainable development in ESD presents a series of constraints that go beyond the needs of the service users. This leads to the question of how can Service Design incorporate such constraints into its methods and tools to be more engaged with the context of sustainable development?

8.6 Final Reflections

The following section is some final reflections on how this thesis is positioned in relation to current design practice and design practitioners and seeks to further highlight its contribution to knowledge.

8.6.1 Alternative audiences for the SES Model

The research was undertaken with a service designer in mind as the main recipient of this work. The aim of the research was to explore the context of sustainable education as a new service model which service designers can help schools to

implement. The outcome of the research has also been subsequently presented to members of Sustainable School Alliances (SSA) and its relevance for an educational community that has been working towards ESD has been noted. In particular there are at least two types of audiences within the educational sector that can benefit from further research: schools that are seeking to implement ESD and educational bodies who work on a wider and more strategic levels such as SSA. The various needs of these audiences will presuppose different ways that they will engage with the research. This opens opportunities for further research to support these audiences. In the first instance the research may look at transfer of knowledge of service design methods to enable implementation of the new model without a service designer being present. In the latter instance work that relates to development of tools and processes to support strategic decision making or strategic solution development in relation to current research may be undertaken further.

8.6.2 Joined up thinking: practice vs policy

The research also identified the wider issues and opportunities that relate to change in education. For example this research highlighted joined up thinking as the most vital process to enabling education for sustainable development and sustainable development as a whole. This type of thinking when embedded not only in the curriculum but school processes, operations and behaviours encourages a school culture that is engaged in social cohesion as well as environmental integrity. However literature review and individual case studies showcase that this joined up thinking is neither encouraged nor enabled at the governmental level.

For example the focus of government is on measuring academic attainment in schools. This approach leads schools and teachers to isolate and focus on the development of skills in students that are measurable. This does not only contradict the joined up thinking approach of sustainable development but also theories that focus on whole child development. This research brought attention to schools that value joined up thinking, being led by leaders who encourage a whole school approach at an individual school level without being recognised or rewarded. This

research shows that there is an opportunity for further work to bridge practice and policy. Further research can be done on how to enable joined up thinking at schools and communities from a strategic, policy level.

8.6.3 ESD and Social Innovation

The research further identified cases of 'social innovation' in schools that illustrate joined up thinking in projects within a particular school as well as between schools and communities. These instances have been found both in the most sustainable as well as least sustainable schools. This finding suggests that joined up thinking is not a characteristic of a school that is concerned with sustainable development only, but can be encouraged and enabled in other contexts as well. Joined up thinking is closely associated with principles of co-design and co-creation enabled by service design. If joined up thinking exists in some schools already there is an opportunity to do further research to identify and to codify these practices and use service design to enable them. Future research may also look at other instances of social innovation as exemplars of sustainable practices within the school to school or school to community contexts and research their appropriateness for other situations.

8.6.4 Service Design, ESD and Transformational change

The potential of Service Design to transform organisations, social and political structures in the future has been recently acknowledged. This research further highlighted this opportunity in the context of ESD. The research developed a theoretical argument for the appropriateness of service design engaging with change towards ESD on a transformational level. The model developed from the in depth research and Service Design thinking probed service designers to envisage multiple scenarios of strategic transformational change in education towards ESD. Scenarios ranged from service design engaging at a school level to working across all levels including local and national governments. These practical scenarios and a theoretical argument highlight the spectrum of opportunities that an ESD context provides for Service Design at a transformational change level.

8.7 SES MODEL an expansion of WHOLE SCHOOL APPROACH

MODEL

The use of Service Design thinking (including Service-Dominant logic, systemic thinking and user-centeredness) when applied to findings from the case studies and literature, enables a new model of the school that is engaged in ESD. This model expresses a particular relationship between the school and its user, service co-production and co-development. The model focuses on the user experience while considering the integration of all the elements of the school as a service organisation. This service view is new within educational literature and may be said to be an expansion of the whole school approach model developed by Shallcross (2005) and recognised by the ESD community (Henderson and Tilbury, 2004).

The whole school approach model “integrates pedagogy with the social/organisational and technical/economic aspects of school practice” (Shallcross, 2005: np). This school-focused model has been further modified by Expertnet (Mathar, 2013) to highlight circumstantial factors (external and internal) that influence schools on daily basis. Stone (2007) uses the whole school approach to rethink a specific school area – students’ lunch. What is evident in these models is the focus on the integration of the school’s elements, including teaching and learning. However, whilst ESD literature refers to the importance of whole school approach in the emerging learner-centred practices (Henderson and Tilbury, 2004) and enabling responsible citizens (Scott, 2011), the **learner is only an implicit asset within these models**. This is further supported by the case studies findings, where integration of the learner in schools’ ESD development is based on the school’s staff tacit knowledge about what such integration requires.

Yet, research found that there are two types of user integration needed to develop ESD, but schools are not aware of these and therefore a wide variation of user integration within ESD can be found across the schools. **The SES Model uses service thinking and user-centeredness to understand and codify the relationship between the learner and the whole school, making such knowledge explicit.**

Codifying and making knowledge explicit makes it easier for an organisation to recognise, share and manage such knowledge (Haldin-Herragard, 2000). The SES Model therefore brings attention to learner/school integration, enabling schools to share this knowledge amongst the stakeholders and therefore further enabling a whole school approach. The model may also support future school improvement based on learner's experience as a basis for transformation – a recommendation for ESD development by UNECE (UNECE, 2014).

References

- Actonenergy** (2013) *Act on Energy* [Online]. Available from: <http://www.actonenergy.org.uk/>. [Accessed: May 23, 2013].
- Akbayrak, B.** (2000) A comparison of two data collection methods: Interviews and questionnaires. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, [Online] (18). pp.1-10. Available from <http://www.efdergi.hacettepe.edu.tr/200018BURCU%20AKBAYRAK.pdf> [Accessed: December 4, 2013].
- Alvarez, A., & Rogers, J.** (2006) Going “out there”: Learning about sustainability in place. *International Journal of Sustainability in Higher Education*. 7(2). pp.176-188.
- Ancona, D.** (2011) Sensemaking: Framing and Acting in the Unknown. In Snook, S., Nitin N., and Rakesh K.(Eds.) *The handbook for teaching leadership: Knowing, doing, and being* pp.3-19. Sage: Publications.
- Argyris, C.** (1976) Single-loop and double-loop models in research on decision making. *Administrative science quarterly*. 21(3). pp.363-375.
- Barrett, F. J. and Fry, R. E.** (2005). *Appreciative inquiry: A positive approach to building cooperative capacity*. Chagrin Falls, OH: Taos Institute Publications.
- Bate, S. P., & Robert, G.** (2006). Experience-based design: From redesigning the system around the patient to co-designing services with the patient. *Quality and Safety in Health Care*. 15(5). pp.307-310.
- Bate, P., Khan, R., & Pye, A.** (2000) Towards a culturally sensitive approach to organization structuring: Where organization design meets organization development. *Organization Science* . 11(2). pp.197-211.
- Binder, T., Brandt, E. & Gregory, J.** (2008) Design participation (-s). *CoDesign*. [Editorial] pp.1-3.
- Birney, A. & Reed, J.** (2009) *Sustainability and renewal: findings from the Leading Sustainable Schools research project*. Nottingham: National College.
- Blair, J., Czaja, R. F., & Blair, E. A.** (2013) *Designing surveys: A guide to decisions and procedures*. London: Sage Publications, Inc.
- Blair, F.** (2011) *Leading for the Future*. [Online] Available from: http://www.academia.edu/1475159/Leading_for_the_future [Accessed: March 9,

2013]

Bourn, D. (2008) Education for sustainable development in the UK: Making the connections between the environment and development agendas. *Theory and research in education*. 6(2). pp.193-206.

Bourn, D. (2005) Education for Sustainable Development and Global Citizenship - The UK Perspective. *Applied Environmental Education & Communication*. 4(3). pp.233-237.

Bowen, S., Dearden, A., Wright, P., Wolstenholme, D., & Cobb, M. (2010) *Participatory healthcare service design and innovation*. In Proceedings of the 11th Biennial Participatory Design Conference. New York: ACM Press. pp.155-158.

Brundtland, G.H. (1987) *Our Common Future: The World Commission on Environment and Development*. Oxford: Oxford University Press

Bryman, A. (2004) *Research methods and organization studies*.(2). London: Routledge.

Burns, D. (2007) *Systemic Action Research: A strategy for whole system change*. Bristol: The Policy Press.

Burns, R. (2000) *Introduction to research methods*. London: SAGE Publications.

Buchanan, R. (1992) Wicked Problems in Design Thinking. *Design Issues*. Cambridge, Massachusetts: The MIT Press. 8 (2) pp. 5-21.

Buchanan, R. (2001) Human dignity and human rights: Thoughts on the principles of human-centered design. *Design Issues*. Cambridge, Massachusetts: The MIT Press. 17(3). pp.35-39.

Cantù, D., Corubolo, M., & Simeone, G. (2012) *Developing collaborative services in local contexts* [Online] pp.1-11 Available from <http://cumulushelsinki2012.org/cumulushelsinki2012.org/wp-content/uploads/2012/05/Developing-collaborative-services-in-local-contexts.pdf> [Accessed: May 10, 2013].

Capra, F. (1994) *Ecology and community*. Lecture presented to administrators and faculty of Mill Valley School District. Berkeley: Centre for Ecoliteracy.

Capra, F. & Gunter P. (1995) *Steering Business toward Sustainability*. Tóquio:United Nations University Press.

Carr, V., Sangiorgi, D., Büscher, M., Cooper, R., & Junginger, S. (2009) Clinicians as

service designers? Reflections on current transformation in the UK health services. In *Conference Proceedings ServDes*. pp. 31-42.

Chick, A. & Micklethwaite, P. (2011) *Design for Sustainable Change: How Design and Designers Can Drive the Sustainability Agenda*. Singapore: AVA Publishing.

Chowdry, H., & Sibieta, L. (2011) School funding reform: an empirical analysis of options for a national funding formula. [Online] Available from: <http://www.ifs.org.uk/bns/bn123.pdf> [Accessed: February, 2012].

Cipolla, C. (2009) Relational services: service design fostering sustainability and new welfare models. In Silva, J., Moura, M. and Dos Santos, A. (Eds.) *2nd International Symposium on Sustainable Design*. Sao Paulo, Brazil, Brazil Network on Sustainable Design.

Cipolla, C., & Moura, H. (2011) Social Innovation in Brazil Through Design Strategy. *Design Management Journal*. 6(1) pp.40-51.

Clatworthy, S. (2011) Service innovation through touch-points: development of an innovation toolkit for the first stages of New Service Development. *International Journal of Design*. 5 (2) pp.15-28.

Cobb, J. B. (1995) *Is it too late?: A Theology of Ecology*. Denton, Tex.: Environmental Ethics Books.

Cohen, L., Manion, L., & Morrison, K. (2013) *Research methods in education*. London: Routledge.

Cottam, H & Leadbeater C. (2004) *HEALTH: Co-creating Services, RED paper 01*. London: Design Council.

Creswell, J. W. (2014) *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks: SAGE, Publications.

Davidoff, S. & Lazarus, S. (1997) *The learning school. An organisation development approach*. Kenwyn: Juta.

Daymon, C. & Holloway, I. (2002) *Qualitative research methods in public relations and marketing communications* New York: Routledge.

DCSF (2008) *Towards Whole School Sustainability: A View From London Schools*. London: Government Office for London.

De Haan, G. (2010) The Development of ESD-Related Competencies in Supportive Institutional Frameworks. *International Review of Education*. [Online] 56 (2-3), pp.

315-328 Available from:

<http://www.springerlink.com/content/ek411m104jwq7728/fulltext.pdf> [Accessed: July, 2012].

Denzin, N. K. and Lincoln, Y. S. (Eds.) (1998) *Collecting and Interpreting Qualitative Materials*. Thousand Oaks: SAGE Publications.

Design Commission (2013) *Design for public good*. [Online]

<https://www.designcouncil.org.uk/knowledge-resources/design-public-good>

[Accessed on 2 February ,2014].

DfES (2004) *National Standards for Headteachers* Nottingham: DfES Publications.

DfES (2006) *Extended services: supporting school improvement guidance*. [Online]

Available from:

<http://dera.ioe.ac.uk/6782/1/supporting%20school%20improvement.pdf> [Accessed on June,2012].

DiCicco-Bloom, B., & Crabtree, B. F. (2006) The qualitative research interview.

Medical education. 40(4) pp.314-321.

Eastman, C. M. (1969) On the Analysis of Intuitive Design Processes. pp.21-29. In:

Moore, G. T. (Ed.) *Emerging Methods in Environmental Design and Planning*.

Cambridge, MA: MIT Press.

Eco-Schools England (2013) *Eco-Schools England* [Online] Available from

<http://www.eco-schools.org.uk/> [Accessed: May 2013].

Edvardsson, A. Gustafsson, P. Kristensson, P. Magnusson, J. Matthing (2006)

Involving customers in new service development. London: Imperial College Press

Eisenhardt, K. M. (1989) Building theories from case study research. *Academy of*

management review. 14(4) pp.532-550.

Escobar-Tello, M. C. (2011) *Explorations on the relationship between happiness and*

sustainable design Ph.D. Thesis. Loughborough University, Loughborough

Ferreira, J. A., Ryan, L., & Tilbury, D. (2007) Mainstreaming education for

sustainable development in initial teacher education in Australia: A review of

existing professional development models. *Journal of Education for Teaching*. 33(2)

pp.225-239.

Fischer, F. (2003) *Reframing Public Policy: Discursive Politics and Deliberative*

Practices: Discursive Politics and Deliberative Practices. Oxford: Oxford University

Press.

Fowles, R. A. (2000) Symmetry in Design Participation in the Built Environment: Experiences and Insights from Education and Practice. In Scrivener, S. A. R., Ball, L. J. & Woodcock, A. (Eds.) *CoDesign*. Coventry: Springer.

Freire, K. and Sangiorgi, D. (2010) Service design and healthcare innovation: From consumption to coproduction and co-creation. In *2nd Nordic Conference on Service Design and Service Innovation*. Linköping, Sweden,

Flick, U. (2014) *An introduction to qualitative research*. London: Sage Publications

Gedenryd, H. (1998) *How Designers Work: Making Sense of Authentic Cognitive Activities*. Doctoral Dissertation. Cognitive Studies, Lund University, Lund.

Gibbs, G. (2007) *Analyzing Qualitative Data* (Ed.) Flick, U. London: Sage Publications.

Gorb, P., & Dumas, A. (1987) Silent design. *Design studies*. 8(3) pp.150-156.

Gough, S. & Scott, W. A. H. (2007) Universities and Sustainable Development: the necessity for barriers to change. *Perspectives: Policy and Practice in Higher Education*. 11(4). pp. 109-118.

Goulding, C. (2002) *Grounded theory: A practical guide for management, business and market researchers*. London: Sage Publications.

Gov.uk (2013) *Giving local authorities more control over how they spend public money in their area* [Online] Available from: <https://www.gov.uk/government/policies/giving-local-authorities-more-control-over-how-they-spend-public-money-in-their-area--2> [Accessed at 10 January, 2014].

Grace, G.R. (1994) Education is a public good: on the need to resist the domination of economic science. In: Bridges, D. and McLaughlin T.H. (Eds.) *Education and the Market Place*. London: Falmer Press, pp.126-137.

Gray, D. (2004) *Doing Research in the Real World*. London: Sage Publications.

Grönroos, C. (2008) Service logic revisited: who creates value? And who co-creates? *European Business Review*. 20(4) pp.298 – 314.

Haldin-Herrgard, T. (2000) Difficulties in diffusion of tacit knowledge in organizations. *Journal of Intellectual capital*. 1(4). Pp.357-365.

Hannon, V. (2007) *Next practice in education: a disciplined approach to innovation*. London: The Innovation Unit.

- Hargreaves, L. G.** (2008) The whole-school approach to education for sustainable development: From pilot projects to systemic change. *Policy & Practice-A Development Education Review*. (6). pp.69-74.
- Hartley, J.** (2005) Innovation in governance and public services: Past and present. *Public money and management*. 25(1) pp.27-34.
- Hatch, M.J.** (1993) The dynamics of organizational culture. *Academy of Management Review*. 18(4) pp. 657-693.
- Henderson K. & Tilbury D.** (2004) Whole school approaches to sustainability: An International review of sustainable schools programs, In *Aries* (Eds.) Sydney: Macquarie University.
- Heron, J. & Reason, P.** (1997) A Participatory Inquiry Paradigm. *Qualitative Inquiry*. 3(3) pp.274-294.
- Holmlid, S.** (2007). Interaction design and service design: Expanding a comparison of design disciplines. Nordes Conference. [Online] Available from: <http://www.nordes.org/opj/index.php/n13/article/view/157/140> [Accessed: September, 2013].
- Holmlid, S.** (2012) Designing for Resourcefulness in Service. Some Assumptions and Consequences. In Miettinen, S. & Valtonen, A. (Eds.). *Service Design with Theory*. Vantaa: Lapland University Press.
- Huckle, J.** (2009) Consulting the UK ESD community on an ESD indicator to recommend to Government: an insight into the micro-politics of ESD. *Environmental Education Research*. 15 (1). pp.1-15.
- Husbands, C. & Blum, N.** (2009) *Climate change and sustainability education: The response from education in the UK*. London: Institute of Education, University of London.
- Iversen, O. S., & Brodersen, C.** (2007) Bridging the Gap between users and children- A socio-cultural approach to designing with children, selected for inclusion. In *Cognition, Technology and Work special issue on Child-Computer Interaction: Methodological Research*. [Online] Available from: <http://www.interactivespaces.net/data/uploads/papers/2.pdf> [Accessed January, 2014].
- Jackson, L., Birney, A., Edwards, D., Gayford, C., Mehta, P., Morgan, A. & Riley, K.**

(2007) *Leading sustainable schools: what the research tells us*. Nottingham: National College for School Leadership.

Jégou, F. (2011) Case study 16, Designing of a collaborative projection of the In Design for Services. Meroni, A. and Sangiorgi, D. (Eds). UK: Gower.pp.172-181

Jickling, B. (2005) Education and advocacy: A troubling relationship. In *Environmental Education and Advocacy: Changing Perspectives of Ecology and Education*. Johnson, E. A. and Mappin, M. (Eds.) Cambridge: Cambridge University Press. pp. 91-113.

Johnson, J. and Henderson, A. (2002) Conceptual Models: Begin by Designing What to Design. *Interactions* 9(1) pp.25-32.

Jones, J. C. (1992) *Design Methods: Seeds of Human Futures*. 2nd (Eds). Bath: John Wiley and Sons Ltd.

Junginger, S., & Sangiorgi, D. (2009) Service design and organizational change: Bridging the gap between rigour and relevance. In *3rd IASDR Conference on Design Research*, Seoul, Korea.

Kennedy, C. (1987) Innovating for a change: teacher development and innovation. *ELT Journal* 41 (3). pp.163-70.

Kimbell, L. (2011). Designing for Service as One Way of Designing Services. *International Journal of Design*. 5(2). pp.41-52.

Kimbell, L. (2009) The turn to service design. *Design and creativity: Policy, management and practice.e* pp.157-173.

Knight, J. (2012) Applying the Experience Design Framework to the Service Domain In Miettinen, S. & Valtonen, A (Eds). *Service Design with Theory*. Vantaa: Lapland University Press.

Kolko, J. (2010) Sensemaking and Framing: A Theoretical Reflection on Perspective in Design Synthesis. In *Design Research Society conference proceedings*. [Online] Available from: <http://www.drs2010.umontreal.ca/data/PDF/067.pdf> [Accessed: February, 2013].

Kotter, J.P. & Schlesinger, L. A (1979) Choosing strategies for change. *Harvard Business Review*. 57(2) pp.106–114.

Kuzmina K, Bhamra T.A.& Trimmingham R. (2012) Service design and its role in changing education, In *Service Design with Theory*. Miettinen, S. & Valtonen, A

- (Eds). Vantaa : Lapland University Press.
- Lee, Y.** (2007) What are the social responsibilities of designers? Investigating new perspectives for design participation. *IASDR 07*. Hong Kong Hon Kong: Polytechnic University.
- Lofthouse, V.** (2001) Facilitating Ecodesign in an Industrial Design Context: An Exploratory Study School of Industrial and Manufacturing Science Enterprise Integration, PhD Thesis. Cranfield University, Cranfield.
- Lieberman, H.** (1995). The visual language of experts in graphic design. In *Visual Languages, Proceedings, 11th IEEE International Symposium* pp. 5-12.
- Mager, B.** (2004) *Service Design - A Review*. Koln: Koln International School of Design
- Macdonald, A.S., Teal, G., Bamford, C., and Moynihan, P.J.** (2012) Hospitalfoodie: an inter-professional case study of the redesign of the nutritional management and monitoring system for vulnerable older hospital patients. *Quality in Primary Care*. 20(3). pp.169-177.
- Marshall, C., & Rossman, G. B.** (1999) *Designing qualitative research*. Thousand Oaks: SAGE, Publications.
- Mathar, R.** (2013) *The concept of whole school approach – a platform for school development with focus on sustainable development*. [Online] Available from: <http://esd-expert.net/assets/130314-Concept-paper-ESD-Whole-school-approach-general-introduction.pdf> [Accessed 16 February, 2014].
- Maxwell, J. A.** (2012) *Qualitative research design: An interactive approach* (41) Thousand Oaks: SAGE, Publications.
- McKeown, R.&C. Hopkins.** (2007) Moving beyond the EE and ESD disciplinary debate in formal education. *Journal of Education for Sustainable Development*. 1(1) pp.17–26.
- Mendel, J.** (2012) A taxonomy of models used in the design process. *Interactions*. 19(1). pp.81-85.
- Meroni, A., & Sangiorgi, D.** (Eds.). (2011) *Design for services*. UK: Gower.
- Mertens, D. M.** (2009) *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods*. Thousand Oaks: SAGE, Publications.

- Miles M.,Thangaraj A.,Dawei W.& Huiqin M.** (2002). Classic theories— contemporary applications: A comparative study of the implementation of innovation in Canadian and Chinese Public Sector environments. *The Innovation Journal: The Public Sector Innovation Journal*. [Online] Available from <http://www.innovation.cc/peer-reviewed/classic-theories.pdf> [Accessed: December 16, 2012]
- Mitchell, W. J.** (2011) *Smart Cities Lab at MIT*. [Online] Available from: <http://cities.media.mit.edu/> [Accessed: March, 2013].
- Mulà, I. & Tilbury, D.** (2011) (Eds) *National Journeys towards Education for Sustainable Development UNESCO: Paris*.
- Mulgan, G.** (2014) *Design in Public and Social Innovation*. [Online] Available from: <http://www.nesta.org.uk/publications/design-public-and-social-innovation> [Accessed on 2 February ,2014]
- Mulgan, G. and Albury, D.** (2003) *Innovation in the Public Sector*. London: Prime Minister’s Strategy Unit/Cabinet Office. [Online] Available from: <http://www.cabinetoffice.gov.uk/media/cabinetoffice/strategy/assets/pubinov2.pdf> [Accessed on February ,2014]
- Nelson, H. G. & Stolterman, E.** (2003) *The design way: Intentional change in an unpredictable world: Foundations and fundamentals of design competence*. Cambridge, Massachusetts: The MIT Press.
- Ng, I. C., & Forbes, J.** (2009) Education as service: the understanding of university experience through the service logic. *Journal of Marketing for Higher Education*. 19(1) pp.38-64.
- Ofsted** (2008) *Schools and sustainability: A climate for change?* London. [Online] Available from: <http://www.ofsted.gov.uk/resources/schools-and-sustainability> [Accessed October 2013].
- Pacenti, E.** (2011) Case study 7 How Service Design Can Support Innovation in the public Sector. In *Design for Services*. Meroni A. and Sangiorgi, D. (Eds). UK: Gower Publishing. pp. 97-105.
- Parker, S. and Heapy, J.** (2006) *The Journey to the Interface How public service design can connect users to reform*. London: Demos.
- Pedersen, J. and Buur, J.** (2000) *Games and Movies: Towards Innovative Co-Design*

- with Users. In *CoDesign*. Scrivener, S. A. R., Ball, L. J. and Woodcock, A. (Eds.)
Coventry: Springer.
- Polaine, A.** (2012) Play, interactivity and service design: Towards a unified language. In *Service Design with Theory: Discussions on Change, Value and Methods*.
Miettinen, Satu & Valtonen, Anu (Eds.). Lapland: Lapland University Press. pp. 159-168.
- Raijmakers, B., van Dijk, G., Lee, Y., & Williams, S. A.** (2009) Designing Empathic Conversations for Inclusive Design Facilitation. In *Include Conference 2009*.
- Ranson, S., Hinings, B., & Greenwood, R.** (1980) The structuring of organizational structures. *Administrative science quarterly*. (25) pp. 1-17.
- Reed, J.** (2009) *Education for Sustainable Development: A comparison between two eco-schools, one in England and the other in South Africa*. Ph.D. Thesis. U.K: Manchester Metropolitan University.
- Hernandez-Pardo, R. Tracy, B. & Ran, B.** (2012) *Sustainable Product Service Systems in Small and Medium Enterprises (SMEs): Opportunities in the Leather Manufacturing Industry*. In *Sustainability* 4(2). pp.175-192.
- Robson, C.** (2002) 2nd (Ed). *Real world research*. Oxford: Blackwell.
- Rugg, G. & Petre, M.** (2006) *A gentle guide to research methods*. England: Open University Press.
- Sangiorgi, D.** (2012) Value co-creation in design for services. In *Service Design with Theory: Discussions on Change, Value and Methods*. Miettinen, Satu & Valtonen, Anu (Eds.). Lapland: Lapland University Press.
- Sangiorgi, D.** (2011) Transformative Services and Transformation Design. In *International Journal of Design*. 5 (2). pp.29-40.
- Sapsford, R., & Jupp, V.** (Eds.). (2006) *Data collection and analysis*. London: Sage Publications.
- Schein, E. H.** (1990) Organizational Culture. *American Psychologist*. 45 (2) pp.109-119.
- Schermann, M., Bohmann, T. and Krcmar, H.** (2009). Explicating design theories with conceptual models: Towards a theoretical role of reference models. *Springer*, pp.175--194.

- Schwandt, T. A.** (2001) *Dictionary of qualitative inquiry*. Thousand Oaks: Sage, Publications.
- Segelström, F.** (2010) *Visualisations in Service Design*. Linköping, Sweden: Linköping University.
- Service Design Research Network (SDR) UK** (2013) *Building the Service Design Research UK Landscape* [Online] Available from: http://imagination.lancaster.ac.uk/sites/default/files/news_downloads/sdruk_-_workshopreport_1.pdf [Accessed 5 January 2014].
- Seyfang, G., & Smith, A.** (2007) Grassroots innovations for sustainable development: Towards a new research and policy agenda. *Environmental politics*. 16(4). pp. 584-603.
- Shallcross, T.** (2005) Whole school approaches to education for sustainable development through school-focused professional development (The SEEPS project). *Education for a Sustainable Future*. [Online] Available from: <http://www.cceindia.org/esf/download/paper51.pdf> [Accessed December, 2013]
- Silverman, D.** (2005) *Doing qualitative research: a practical handbook*. London: Sage Publications.
- Simon, H. A.** (1996) *The sciences of the artificial*. Cambridge, Massachusetts: MIT Press.
- Skyttner, L.** (2005) The future of systems thinking. *Systemic Practice and Action Research*. 11 (2) pp. 193-205.
- Smircich, L. and G. Morgan** (1982) Leadership: The Management of Meaning. *Applied Behavioural Science*. 18(3). pp.257-273.
- Spraragen, S and Hickey, V.** (2011) Case Study 09: Enabling Excellence in Service with Expressive Service Blueprinting. In *Design for Services*. Meroni A. and Sangiorgi, D. (Eds.) UK: Gower Publishing pp.112-117.
- Steen, M.** (2011): Tensions in human-centred design. *CoDesign*. 7(1) pp.45-60.
- Steen, M., Manschot, M., & De Koning, N.** (2011) Benefits of Co-design in Service Design Projects. *International Journal of Design*,5(2). [Online] Available from: <http://www.ijdesign.org/ojs/index.php/IJDesign/article/viewFile/890/339> [Accessed April, 2013]
- Sterling, S.** (2003) *Whole Systems Thinking as a Basis for Paradigm Change in*

Education: Explorations in the Context of Sustainability. Centre for Research in Education and the Environment. Bath: University of Bath PhD thesis.

Stickdorn, M. & Schneider, J. (2010) *This is Service Design Thinking*. Amsterdam: BIS Publishers.

Stockheim, M. (1986) *Chin and Benne's Change Strategies in Relationship to Programs and Policies in Student Affairs*. PhD Thesis. Florida: University of Florida.

Stone, M. K. (2007). Rethinking school lunch: Education for sustainability in practice. *Canadian Journal of Environmental Education*. (CJEE). 12(1). pp-19.

Sustainable Development Commission (SDC) (2005) *Areas of SDC contribution to the Department for Education and Skills*. [Online] Available from: <http://www.sd-commission.org.uk/data/files/publications/050610Areas%20of%20SDC%20Contribution%20to%20the%20Department%20for.pdf>. [Accessed: July, 2013]

Symons, G. (2008) *Practise, barriers and enablers in ESD and EE: A review of the research*. A Report for SEEd, Shrewsbury, UK.

Szebeko, D. (2011) Case study 1 Co-design in services in the public sector. In *Design for Services*. Meroni A. & Sangiorgi, D. (Eds.) UK: Gower Publishing. pp. 42-52.

Teachers.org.uk, (2014) *National Union of Teachers - NUT*. [Online] Available at: <http://www.teachers.org.uk/node> [Accessed 27 Oct. 2014].

Thackara, J. (2007) *Wouldn't It be Great If.... Designs of The Time Manual*. London: Design Council.

Thomas, D. R. (2006) A general inductive approach for analyzing qualitative evaluation data. *American journal of evaluation*. 27(2) pp.237-246.

Tilbury, D. & Wortman, D. (2004). *Engaging People in Sustainability*. Cambridge: IUCN.

Trochim, W. M. K. (2005) *Research Methods: The Concise Knowledge Base*. Cincinnati: Atomic Dog Publishing.

UKNC Unesco (2010) *Education for Sustainable Development in the UK 2010*. [Online] Available from: www.unesco.org.uk/uploads/UNESCO_educationforsustainabledevc_2010_web.pdf [Accessed: July, 2012]

UNESCO (2009) Bonn Declaration. UNESCO World Conference on Education for Sustainable Development. [Online] Available from: <http://www.esd-world->

conference-2009.org/fileadmin/download/ESD2009_BonnDeclaration080409.pdf

[Last Accessed 25 January, 2012].

UNESCO (2010) UNESCO Strategy for the Second Half of the United Nations Decade of Education for Sustainable Development: Supporting Member States and other stakeholders in addressing global sustainable development challenges through ESD. In *Sector, U. E.* Paris: UNESCO.

UNECE (2014) The UNECE Strategy for Education for Sustainable Development [Online] Available from: <http://www.unece.org/env/esd.html> [Accessed: 20 February, 2014].

Van de Ven, A. H., & Poole, M. S. (1995) Explaining development and change in organizations. *Academy of management review.* 20(3) pp.510-540.

Vargo, S. L., & Lusch, R. F. (2008) Service-dominant logic: continuing the evolution. *Journal of the Academy of marketing Science.* 36(1). pp.1-10.

Vare, P. & Scott, W. (2007) Learning for a change: exploring the relationship between education and sustainable development. *Journal of Education for Sustainable Development.* 1(2). pp.191-198.

Vargo, S. L., & Lusch, R. F. (2004). *Evolving to a new dominant logic for marketing.* *Journal of marketing.* 68(1). pp.1-17.

Vare P. and Scott W. (2007) Learning for a Change: Exploring the Relationship Between Education and Sustainable Development. *Journal of Education for Sustainable Development.* 1(2) pp.191-198.

Wade, R. C. (2008) Thinking Outside the (School) Box. *Theory & Research in Social Education.* 36(2) pp.158-162.

Wals, A. (ed.) (2009) Review of Contexts and Structures for Education for Sustainable Development 2009 (DESD, 2005-2014), Paris: UNESCO. [Online] Available from unesdoc.unesco.org/images/0018/001849/184944e.pdf [Accessed October, 2013]

Wand, Y., & Weber, R. (2002) Research commentary: information systems and conceptual modeling—a research agenda. *Information Systems Research.* 13(4). pp.363-376.

Warr, A. and O'Neill, E. (2005) Understanding Design as a Social Creative Process. *5th Conference on Creativity and Cognition.* London.

- Weber, R.** (2003) Conceptual modelling and ontology: Possibilities and pitfalls. *Journal of Database Management (JDM)*. 14(3). pp.1-20.
- Weisberg, M.** (2007) Who is a Modeler?. *The British journal for the philosophy of science*. 58(2) pp.207-233.
- Wetter-Edman, K.** (2012) Relations and rationales of user's involvement in service design and service management In *Service Design with Theory: Discussions on Change, Value and Methods*. Miettinen, S. & Valtonen, A. (Eds.) pp. 159-168. Lapland: Lapland University Press.
- Wetter-Edman, K.** (2009) Exploring Overlaps and Differences in Service Dominant Logic and Design Thinking. *DeThinking Service ReThinking Design, First Nordic Conference on Service Design and Service innovation*. Oslo, Norway
- Wheeler, A., Boughlagem, D., & Malekzadeh, M.** (2012) What do young people tell us about sustainable lifestyles when they design sustainable schools?. *Architecture & Sustainable Development-Proceedings*. 1(1). pp.65-70.
- Winhall, J.** (2011) Designing the Next Generation of Public Services. In *Design for Services*. Meroni A. and Sangiorgi, D. (Eds.) UK: Gower Publishing. pp.131-139.
- WWF-UK** (2011). Pathways: to education for sustainable development.[Online] Available from: wwf.org.uk/downloads/pathways_2011.pdf [Accessed: August, 2013]
- WWF-UK** (2004) *Pathways: A Development Framework for School Sustainability*. Godalming: WWF-UK.
- Yin, R. K.** (1994) *Case Study Research: Design and Methods*. London: Sage Publications.
- Young, R.** (2008). 'An integrated model of designing to aid understanding of the complexity paradigm in design practice.' *Futures* 40, (6). pp.562-576.

Appendix A



*Ksenija Kuzmina, Sustainable Design Research Group, Loughborough Design School, Bridgeman Centre,
Loughborough University, Loughborough LE11 3TU, UK*

An invitation to take part in Approaches towards Education for Sustainable Development Study

I am a second year PhD research student at Loughborough University and am interested in exploring how primary schools in the UK currently approach Education for Sustainable Development (ESD) and how design and design processes may be used to help schools to move towards ESD. I would like to invite you to take part in this research study. The following letter explains the research in more detail and what it would involve for you. Please take the time to read through the following information carefully.

What is the purpose of the study?

ESD is perceived to be critical for promoting sustainable development and improving the capacity of people to address sustainable development issues. Internationally schools work in a variety of ways towards ESD including environmental outcomes while others focus more on educational processes and change, or a combination of two. Yet literature shows that the majority of schools in the UK have limited awareness of ESD and a number of schools that pursue it struggle to 'sustain' it. The aim of the first part of this research is to gain better understanding of the current situation in the UK primary schools, explore existing approaches towards ESD, and understand drivers and barriers for implementing change towards ESD.

The second part of the research aims to explore design processes as a method for helping schools to transform towards ESD. Design is concerned with problems of change and improving the world in some way resulting in novel and 'appropriate solutions'. This presents an opportunity to research design processes as an alternative method in the contexts where need for change exists.

Who is doing this research?

The study will be conducted by Ksenija Kuzmina, a second year PhD student under supervision of Dr. Rhoda Trimmingham and Prof. Tracy Bhamra and funded by Loughborough University.

Why has my school been invited to participate?

The researcher is inviting two groups of schools to take part in the study. Group 1 are primary schools that are moving towards ESD and Group 2 are primary schools that are not currently working towards it but are interested in pursuing it. There is currently no definite criteria for identifying if a school is moving towards ESD, however, some indicators can be considered but are not exclusive including eco-school ranking or high marks on sustainability from Ofsted. To be eligible for both groups your school should be a primary state school in the areas of Leicestershire, Nottinghamshire, or City of London.

Does our school have to take part?

I hope that you will be able to find the time to help the study, but you are under no obligation to take part in this research. If you do decide now that you would like to help with the study then you will be free to leave it at any point, without having to give a reason and to ask that the data you provided be deleted or withdrawn from the study.

What will happen if our school takes part?

If your school would like to take part it will be approached three times throughout the study and an optional fourth time.

1. The first time will involve a meeting with the Headteacher, on the premises of the school, where the researcher will explain the study in further detail and will interview the Headteacher for an hour.
2. The next step will be to administer a questionnaire to the schools' staff online or by post. The questionnaire should take approximately 45 minutes to complete.
3. The interviews will be followed by additional 30 minute interviews carried out with selected staff (maximum three people in each school) on the premises of the school.

The researcher will use the data from the interviews and the questionnaires to develop a design workshop which will help schools to move towards integrating ESD into their practice.

4. The fourth step is an opportunity for the school to implement the workshop, which will involve the researcher, staff and the Headteacher (based on availability). An invitation will be sent out to the school explaining what the workshop entails and inviting you to participate in the workshop

(maximum participation of fifteen people). The workshop will take an hour and will involve a creative session on the premises of the school (if possible) led by the researcher. At the end of the workshop the participants will be asked to share their experience which will be recorded via dictaphone. The workshop is an optional step that school might consider.

*Table 1. Current time table of the research**

1 st November 2010 – 20 th December 2010	19 th January 2011 – 15 th February 2011	2 nd May 2011 – 26 th May 2011	23 rd November 2011 – 2 nd March 2012
1 .Conducting interviews with Headteachers	2. Distributing and collecting staff questionnaires	3 .Conducting additional interviews with staff	4. Conducting a workshop

*The dates may be changed

Will schools taking part in this study be kept confidential?

All the information the school provides for this research will be confidential and used for the purposes of this study only. The data will be collected and stored in accordance with the Data Protection Act 1998 and will be disposed of in a secure manner. The information will be used in a way that will not allow the school and the individuals taking part in this study to be identified individually.

What will happen to the results of the study?

The results of the study will be published as a thesis.

What does the school get for participating?

School participating in Group 1 or Group 2 may benefit from this study whether it takes part in the workshop or not.

1. School will be contributing to the area of knowledge where research has been scarce. The process of the research will allow schools to re-examine this current activity (or absence of it) towards ESD.
2. Participation in the workshop may help to increase the awareness of ESD amongst greater number of school staff including the Headteacher.
3. The output of the research which will be readily available to the school, will provide an opportunity for gaining new insights about ESD, be an opportunity to become involved with ESD or used to improve the existing ESD practice in the school.

What happens now?

If your school is interested to participate in the study, please contact Ksenija Kuzmina (see details

below). The consent form will be sent to your school to be signed by the Headteacher and the date for the first visit will be set.

I have some more questions who should I contact?

If you have more questions please contact Ksenija Kuzmina at any time (see details below).

Thank you,

Ksenija Kuzmina

PhD student , 2nd year

Sustainable Design Research Group

Email: K.Kuzmina@lboro.ac.uk

Mobile: 07958619084 Office: **01509** 228321

Loughborough Design School, Bridgeman Centre

Loughborough University

Loughborough LE11 3TU, UK

Sustainable Design Research Group was formed in 2003 and brings excellence in research, teaching and enterprise in education, people, methods and tools, making connections, products, services and systems. Recent projects in education involve The Sustainability Handbook for D&T Teachers with information and ideas on how teachers and students can contribute to creating a more sustainable world and Sustainable Technology Education Project (STEP) which aims to increase people's awareness of sustainable technology.

Appendix B

Possible set of questions to ask Head teacher

1. What are the motivations behind becoming involved with education for sustainable development research project?
2. Would you call your schools sustainable?
3. What is your definition of sustainable development?
4. How would you define education for sustainable development?
5. Are there any experiences or values that influence you in how you perceive sustainable development and education for sustainable development?
6. Does the school have ethos? What is it?
7. Could you tell me about what occurs in your school that you think correlates to that definition? How it has been initiated? Who leads the activities?
8. Sustainable development is often represented as 3 interlocking dimensions: environmental, social, and economic. How do these dimensions relate to your school?
9. As the head teacher what is your role in how change occurs in the school?
10. What are the roles of the stakeholders a. students b. others in supporting or driving the process of change? Who are the most important stakeholders?
11. What are the (external/internal) barriers to moving forward with change in the school?
12. What are the (external/internal) drivers for moving ahead with change in the school?
13. What are the schools' view on pedagogy?
14. How do the current governmental structures support or prevent your school in creating change within school?

Appendix C



Primary School Rough Transcript

[REDACTED]: Due to popular demand we are going up to three form and its cheaper to refurbish and to change the structure of this building, this campus, then to build one form entry school. A one form entry school would cost about 4 million pounds So for 700 thousand pounds the local authority are getting another school if you like or the equivalent of capacity of another school. So on that basis we have a kind of mixed economy of the traditional school but because I am allowed to do a refurbishment I am allowed to add more bits to that traditional school. We also got paid a new built which is very eco-friendly. So we got a mixture of the two.

Ksenija: So is the new eco-build, you have plans for it?

[REDACTED]: Its being built at the moment, its almost finished, at the back of the building. So basically, this building that we are in, is the school, the other building we've got used to be the infant school and was one story and Ive used money to create second story on top of traditional built. So the second story is very eco friendly.

Ksenija: What do you mean by that?

[REDACTED]: Sustainable materials have been used, non carcinogenic and non health hazardous production of those materials, the fabric is very very thermally efficient, and what it has done its increased the thermal capacity of the whole building. So that's what we are doing. The reason why asked about the length of the project is that I am also will be opening a brand new school about a mile down the road. It is in the design faze at the moment and that is all about sustainable school: harvesting rain water, grey water matter from the school, its about thermal efficiency, its about undersoiled heating, because it is a brand new estate that is being build. So we are taking undersoiled heating from the more or less 2/3 of this estate in order to provide heating for the school the glazing is thermally reflective so we've got best of both worlds in summer and winter. That might be something you might be interested in looking at as a brand new build.

Ksenija: And is that another primary school?

[REDACTED]: Yes, two form.

Ksenija: And how did that come about?

Appendix D



Ksenija Kuzmina, Sustainable Design Research Group, Loughborough Design School, LDS
2.22, Loughborough University, Loughborough LE11 3TU, UK

Questionnaire: UK Primary Schools and Approaches to Education for Sustainable Development

Thank you for taking part in Approaches to Education for Sustainable
Development Research that is conducted at Loughborough University.

The research is investigating how primary schools in the UK are currently involved
with 'Education for Sustainable Development'. It also seeks to explore how design
processes can be used as a tool to help schools to move towards 'Education for
Sustainable Development'.

This questionnaire focuses on school's involvement with 'Education for
Sustainable Development', has 25 questions (last 2 are optional) and might take 10
minutes of your time. The results of the survey are completely confidential. An
email address is asked of the participants who are interested in taking part in
further research (a workshop with designers).

If there are any questions or concerns, please contact Ksenija at
k.kuzmina@lboro.ac.uk

Thank you for choosing to participate in this research!

Ksenija

1. What is your current role at this school?

2. How long have you been working in the current role at this school for?

3. Are you familiar with the term 'Education for Sustainable Development'?

yes no

3 a. If yes, could you briefly describe what you feel it means?

4. Is 'Education for Sustainable Development' part of your school's ethos?

yes no I don't know

4 a. If yes, could you briefly describe how it is integrated into your school's ethos?

4 b. If no, could you briefly describe what you believe the ethos of your school to be?

5. Is 'Education for Sustainable Development' part of the school's pedagogy?

yes no I don't know

5 a. If yes, can you briefly describe how?

5 b. If no, could you explain why not?

6. When planning your lessons/curriculum do you personally include 'Education for Sustainable Development'?

yes sometimes no I don't know

6 a. If yes, can you explain how?

6 b. If sometimes, can you explain how?

6 c. If no, could you briefly say why not?

7. Is 'Education for Sustainable Development' part of your performance management?

yes no I don't know

7 a. If yes, could you briefly describe the process?

8. Are there any projects that the school has been involved in or is currently involved in that contribute to the school's 'Education for Sustainable Development'?

yes no I don't know

8 a. If yes, could you briefly describe these projects?

8 b. If no, could you briefly describe projects, if any, that the school is involved in?

9. What is your role in these projects? (select all that apply)

- Participant
- Supporting role
- Initiator
- Leader
- Other

9 a. Could you briefly expand on your role(s)?

10. Does the school have operations (ex. travel plans, procurement policies, waste management) that you think might relate to 'Education for Sustainable Development'?

yes no I don't know

10 a. If yes, could you briefly describe what they are?

11. Does the school promote 'Education for Sustainable Development' to others (ex. other schools, communities, organizations)?

yes no I don't know

11 a. If yes, could you briefly describe how?

12. Is 'Education for Sustainable Development' in your school:

an ongoing priority

- a priority for a short period of time
- becoming a priority
- not a priority
- I don't know

13. Is 'Education for Sustainable Development' a priority to you?

- yes somewhat no I don't know

13 a. If no, could you explain why?

14. Work on 'Education for Sustainable Development' in this school is initiated by (select all that apply):

- Headteacher
- Senior staff
- Teachers and other staff
- Parents
- Governors
- Children
- Community
- External organisations
- Does not apply

15. Have you ever been designated work on 'Education for Sustainable Development'?

- yes no I don't know

15 a. If yes, could you expand on these responsibilities?

16. Have you done any 'Education for Sustainable Development' in the school independently?

- yes no I don't know

16 a. If yes, could you briefly describe it?

17. Are you planning to do any work on 'Education for Sustainable Development' in the upcoming school year?

- yes no I don't know

17 a. If yes, could you briefly describe it?

18. What do you perceive as general external barriers to 'Education for Sustainable Development'?

19. Are there external barriers to 'Education for Sustainable Development' that are specific to your school?

yes no I don't know

19 a. If yes, could you please describe what they are?

20. Are there internal barriers to 'Education for Sustainable Development' that your school experiences?

yes no I don't know

20 a. If yes, could you please describe what they are?

21. Do you experience personal barriers that prevent you from being involved in 'Education for Sustainable Development'?

yes no I don't know

21 a. If yes, please describe what they are?

22. What motivates your school to pursue 'Education for Sustainable Development'?

23. What motivates you personally to be involved in 'Education for Sustainable Development'?

24. Would you like to add anything else to this questionnaire?

25. If you would like to be further involved with the research (to take part in follow up questions and/or participate in a two hour design workshop (more information to follow)) please leave your email address to be contacted later.

If you have more questions please contact Ksenija Kuzmina at any time (see details below).

Thank you so much for completing the questionnaire,

Ksenija Kuzmina

PhD student , 2nd year

Sustainable Design Research Group

Email: K.Kuzmina@lboro.ac.uk

Mobile: 07958619084

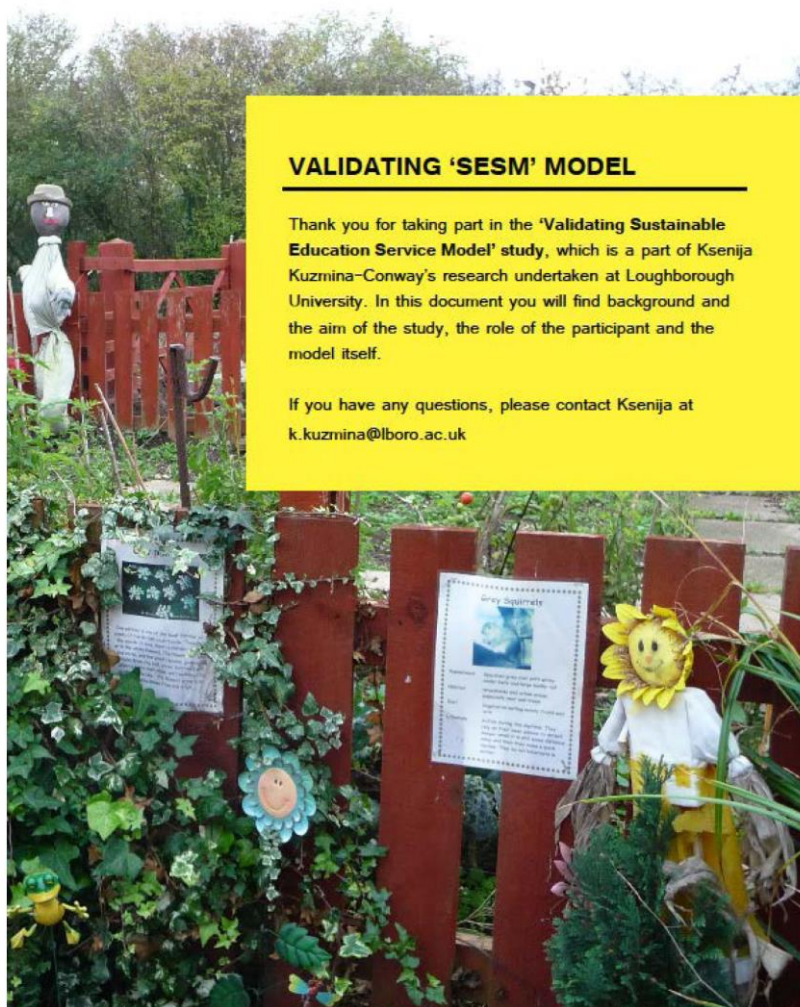
Office: 01509 228321

Loughborough Design School
Bridgeman Centre
Loughborough University
Loughborough LE11 3TU, UK

Sustainable Design Research Group was formed in 2003 and brings excellence in research, teaching and enterprise in education, people, methods and tools, making connections, products, services and systems. Recent projects in education involve The Sustainability Handbook for D&T Teachers with information and ideas on how teachers and students can contribute to creating a more sustainable world and Sustainable Technology Education Project (STEP) which aims to increase people's awareness of sustainable technology.

Appendix E

Page Examples



BACKGROUND TO THE STUDY:

A conceptual model was developed to communicate Sustainable Education phenomena to Service Design community. **The model shows the elements of the phenomena and the relationship between them.**

AIM OF THE STUDY:

The aim of the study is to investigate:

1. Can the model be used by Service Designers to develop understanding of sustainable education as a service phenomena?
2. Can the model be used by Service Designers as a tool during the design process (discover, develop, design, deliver) to engage with the educational institutions in the change process?

ROLE OF A PARTICIPANT:

The study asks service designers (practitioners and academics) to engage with the model (on two occasions) in order to validate its intended purpose.

The initial engagement with the model will occur through this document where overall model and its individual elements are shown. The time spent with the model is decided by the individual participant.

The follow-up interview will be set up between the participant and the researcher via email. The interview will be one-to-one conversation either in person or via skype. It should last between 30-45 minutes. During the interview the participant will be asked to have an open discussion with the researcher in order to answer the two aims of the study as defined in the 'Aim of the Study' section.

During the interview, the researcher might enquire whether the participant has an understanding of the model and its elements and how and whether they would use the model in a design process (discover, develop, design, deliver) in an educational setting.

RESEARCH LIMITATIONS:

The researcher is aware of certain limitations of this model. For example, the extended elements presented can be very lengthy in their wording. In addition, the graphical illustration has been limited to geometrical shapes and words.

The model is not exhaustive and should be perceived as the work in progress.

The researcher is willing to discuss these limitations and to improve the model within the scope of research time constraints.

BACKGROUND TO THE MODEL:

In this research Sustainable Education phenomena is represented on organisational level where a school is defined as a main service provider, student is defined as a user and sustainable education as a value co-created between the two.

Research findings that the model is based on are:

The user experiences the value of sustainable education as a service, when the user takes part in co-production of the primary service (formal/informal curriculum) and organisational co-development at all stages and at the widest scope while attending to sustainability issues, values and concepts.

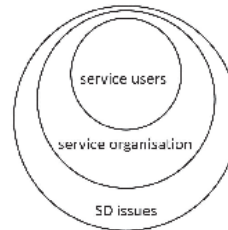


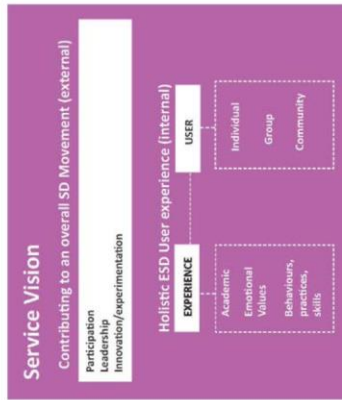
Figure 1. Configuration of service provider and user relationship moving towards ESD

SUSTAINABLE EDUCATION SERVICE MODEL (SESM)

Some of the elements have been developed in further details. The following sections are examples of these elements.

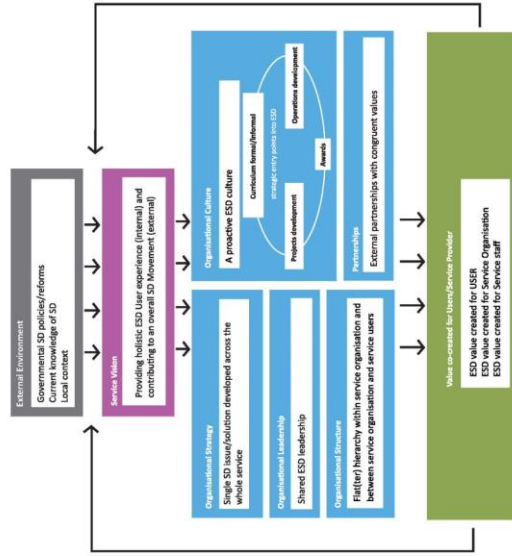
Expanded Service Vision element

Along with the External Environment, Service Vision that organisation develops internally, is the most important input into the organisational change process. The input happens across organisational strategy, culture, structures, and processes. Service Vision integrates the vision of self in relation to external SD movement and development of ESD User experience.



SUSTAINABLE EDUCATION SERVICE MODEL (SESM)

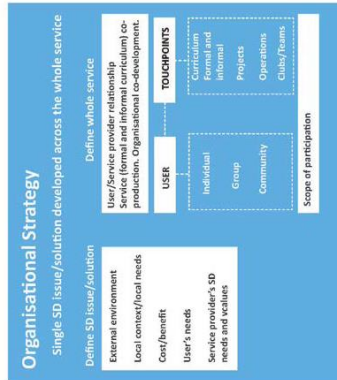
A holistic representation of the system



SUSTAINABLE EDUCATION SERVICE MODEL (SESM)

Expanded Organisational Strategy element

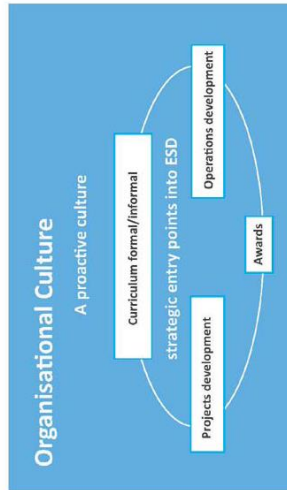
Organisational strategy is a way that the school will implement its vision to develop a holistic ESD user experience and contribute to an external SD movement. The strategy developed by schools presented in this model considers one SD issue, concept or value and seeks to develop it across the whole service.



SUSTAINABLE EDUCATION SERVICE MODEL (SESM)

Expanded Organisational Culture element

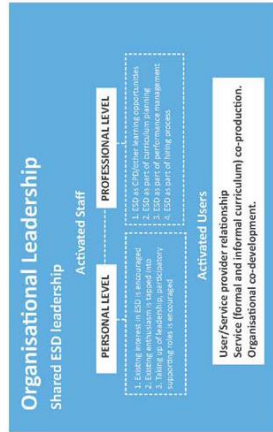
The implementation of organisational ESD strategy is reflected in proactive organisational culture. This means the strategy is implemented throughout all elements of the culture in an integrative way, whilst developing each element to its full potential.



SUSTAINABLE EDUCATION SERVICE MODEL (SESIM)

Expanded Organisational Leadership element

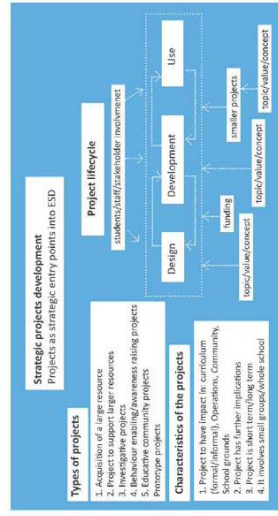
In organisations that move towards ESD leadership is distributed across the school including staff and service users. This is done through a process of activation. The following model shows variables that need to be considered to activate distributed ESD leadership.



SUSTAINABLE EDUCATION SERVICE MODEL (SESIM)

Expanded Projects Development element

Expanded Projects Development element shows variables that require consideration in order to develop the element to the fullest. These variables include the type of the project that is being developed, the characteristics of the project, and the lifecycle of the project.



Appendix F

Type	Name
(Sustainable) school aim	Aims that schools mention

Name	Description
SchoolAim_BeingPartofSustMovement	An aim to genuinely take part in the sustainable movement
SchoolAim_BeingSustainableInDifferentWays	Aim to avoid falling into 'greenwash' and increase different ways that one is sustainable
SchoolAim_CurriculumEnrichmentthroughSD	An aim to enrich the curriculum through sustainable development
SchoolAim_HavingImpactonCommunity	Aim to outreach and to impact the community
SchoolAim_InfluenceChildren	An aim to create a positive impact on the children, their development and their future
SchoolAim_MakingImmediateSchoolSust	Aim is to look at the school, internally, to see how it can become more sustainable
SchoolAim_TacklingSDIssuesToMakeDifference	Aim is to work on projects and issues that make difference and are also beyond curriculum

Approach to ESD	From axial coding: the purposeful, goal oriented activities that agents perform in response to the phenomenon and intervening conditions
-----------------	--

Name	Description
Approach_CreatingGoals	A strategic way for school to create change, the more extreme goal are the more radical is the behavior change
Approach_CreatingSuccession	Appointing individuals that share the values of the school
Approach_EmbeddingIdeas	An approach that makes an idea an integral part of the school
Approach_ExtendingCurrentPractice	Ability to think outside the box and be proactive, shifting perspective on what school normally does or what is considered the norm
Approach_HavingConsistentMessage	School creates the behavioral habit through repeated message
Approach_ImpactingWiderCommunity	An approach for schools to impact the community through moving into the community or bringing community into the school
Approach_ImprovingWhatSchoolOffers	Schools engage in activity that they perceive to improve what their school offers
Approach_InvolvingStakeholders	School proactively involves its stakeholders in its activity and its vision
Approach_KeeptheProfile	Ideas and actions of the school stay visible and continue to have prominence within and outside of the school
Approach_LookingforOpportunities	School seeks opportunities that will help it to achieve its goals
Approach_OvercomingBarriers	Examples of how perceived barriers are overcome by the school
Approach_Partnerships	Schools collaborate between the schools and other various organizations
Approach_PromoteSustainability	School promotes sustainability within and outside to have a collective vision

Approach_TakingSmallSteps	Making small alterations or getting involved with small projects to create greater impact
Approach_UtilizingResources	An approach that schools take to maximize the use of the valuable resource

Barriers to ESD	Intervening conditions, the ones that prevent or become an obstacle to move forwards with the agenda.
-----------------	---

Name	Description
EXT_BusinessAsUsualModel	Current development model that underlies issues of sustainable agenda, political decision making and education system.
EXT_EducationTraditionalIndustry	
EXT_GapRhetoricandReality	There is a perceived gap between what schools or government say they do or would like to do and what they actually are doing and achieving
EXT_INT_BrokenSDLink	Support links that schools have for their projects or SD information resource may get broken due to multiple reasons including external (the result of LA non priority) and internal
EXT_INT_CommunityStatus	Community that is deprived or vulnerable, or even mixed, is seen as a barrier
EXT_INT_CompleteSDUnattainable	
EXT_INT_EasilyMeasurableOutcomes	Government measures schools' performance only based on the quantitative scores from the exams. This creates an opportunity to narrow down one's approach to teaching and only focus on achieving the numbers rather than other less measurable outcomes.
EXT_INT_FamilyValues	When family values and school values are very different creating a challenge for children, parents and the school in general
EXT_INT_InitiativeOverload	There are too many initiatives for school to choose from, schools has to prioritise
EXT_INT_LackofSDCPD	School perceives that there is no professional development courses for the staff to go on to with regards to sustainable development
EXT_INT_LocalAuthorityMoneyforSDProjects	When financial shortage is perceived, the school projects where LA has financial input with sustainable agenda get cut or schools are pressurized to change SD agenda.
EXT_INT_Ofsted	Ofsted produces written reports about schools' progress, a document for schools to mention their work in non quantitative manner. However Ofsted is seen to be mainly interested in the 'numerical scores', and shows inconsistency in teams' interest and support for other areas.
EXT_INT_PrioritytoLocalAuthority	LA may be a barrier to change in the school if it doesn't see what school does as a priority, SD also is not seen as LA's priority in supporting or initiating school projects.
EXT_INT_Regulations	Any type of regulation that prevents schools to move forward with their activity, either an old regulation or a new one that results in change of activity.
EXT_INT_SchoolsinCompetition	Due to 'quasi market' approach schools are in competition with each other which puts them in danger of expressing behavior that narrowly focuses on results and short term appeal.

EXT_INT_SDNotPriorityforGov	Government collapses physical support for sustainable schools, and creates perception that sustainable development is not governments' priority
EXT_LackofClearSDDefinition	Headteachers have difficulty with defining what the aim of sustainable development is
EXT_Mindsets	People's mindsets in general, beliefs, etc. is seen as a barrier to change
EXT_PER_MorallImperative	A moral imperative that arises in the headteacher when there is a strong belief in sustainable development while having to teach the children to fit the business as usual model
EXT_PriorityofCommunity	Decisions and actions that community makes that creates an issue for the school
EXT_SDnotaPublicAgenda	
INT_EngagingStudentsinLearning	A barrier to engaging students in learning when students are of different learning capabilities, genders, backgrounds,
INT_HeadTRunningoftheSchool	
INT_LackofSchoolSupport	A condition where staff and the school culture are not supporting the vision of the headteacher
INT_LackofSDLeadership	Due to hierarchy within the school, there is perception that headteachers as leaders are necessary to move schools towards SD and that there is not enough leaders who are doing it.
INT_Money_SDProcurement	There is lack of money for SD resources or for full ethical procurement
INT_OldBuild	Some old builds, due to their inefficiency are regarded as a barrier to being a truly sustainable school
INT_SDAgendaSideIssueforSchool	If SD agenda is not a priority but is perceived as a side issue by the school then it is hard to integrate it into school.
INT_SDComfortZone	This is a condition that prevents schools to move further, they stay within the comfort zone of what they perceive to be acceptable without pushing the envelope.
INT_Teachers_LackofConstructingCurriculumSkills	Teachers are seen to be trained to deliver rather than construct the curriculum which is seen as a barrier to creating an enriching, school specific curriculum
OtherBarriers	

Conditions for ESD Axial coding: variables that lead to the occurrence or development of the phenomenon. It is a set of causes and their properties.

Name	Description
Condition_BeingPrimarySchool	Primary school is more open to considering and working towards creating and embedding values such as SD and health
Condition_DimensionTime	Change occurs in time, by considering this dimension consistency and inconsistency of change may be observed.
Condition_IdeasSource	A condition that looks at different sources for new ideas to create change within schools
Condition_Inheritance	A state of the school as it is inherited by the headteacher
Condition_Involvement_HeadT	Different ways headteacher is involved within the school to create

	change
Condition_Locality	A characteristic that contributes to sustainable development to be more prominent in the schools.
Condition_MakingSDPriority	A condition for schools to move towards SD and to embed it
Condition_Ownership	Ownership of the school and the decision making process is a condition for change that is not forced from the top but is led from within.
Condition_Personal philosophy	Philosophy of the headteacher which then infiltrates through schools' ethos and actions
Condition_Practicality	A consideration that comes before the school embarks on a new idea or project, practicality has a financial element to it, but also refers to the change that schools' action is creating can be SD but necessarily
Condition_School_Ethos	School's ethos brings the priority of the school to light in a tangible statement and into the heart of the schools' culture
Condition_SDInitial Activity	The initial activity that school takes and focuses on begin the move towards sustainable development
Condition_Skills	Skills for leaders to have and for children to learn that are associated with sustainable development
Condition_SpaceToReflect	Having a space to reflect on their practice lets school to see what school does, and to change or improve the activity if necessary
Condition_SupportofStakeholders	Support stakeholders provide for headteacher and the vision of the school to create (sustainable development) change within the school
Condition_Tangibility	A condition that enables schools to talk about sustainability in the school

Consequences	Axial coding: Consequences of the actions intended or unintended
---------------------	---

Name	Description
Consequence_ChangedBehavior	Change in behavior is observed by headteacher in stakeholders inside and outside the school
Consequence_ChildrenwithTwoSetsofValues	Results when school and home have different values
Consequence_CreatingTangibleOutcomes	Tangible indicators that headteachers talk about with regards to change they are creating
Consequence_DevelopingExpertise	As schools take on projects to work through they develop an expertise in that area
Consequence_EmotionalGratification	Emotional gratification is expressed by headteachers with regard to sustainable projects in the school
Consequence_HealthierEnvironment	Result of having a new build with environmental credentials
Consequence_MotivatedChildren	Sustainable agenda that the schools get involved in creates motivation in children to be proactive and to learn
Consequence_SDChangesPedagogy	The change in pedagogy that schools experience due to implementing sustainable agenda
Consequence_UnifiedCommunity	Sustainable agenda unifies community regardless of individual's status, physical abilities, etc.

Defining 'sustainability'	Headteachers define sustainability
----------------------------------	---

Name	Description
DefSust_Aspiration	Sustainability is an aspiration
DefSust_ComplexIssue	Sustainability is recognized for its complexity
DefSust_InformedChoices	Sustainability is making informed choices (see memo)
DefSust_MinimisingImpactonEnvironment	Sustainability is about minimizing impact on environment
DefSust_ModeofThinking	Sustainability is defined as mode of thinking
DefSust_QuestioningConsumerism	Sustainability is about questioning consumerist society and the role of education in it
DefSust_RedefiningSustainability	Sustainability might be redefined through the use of other frameworks such as Natural Step or Sustainable Schools Framework
DefSust_SustainingRunningSchool	Sustainability in the context of school defined by headteacher as sustaining the running of the school
DefSust_ThreeDimensions	Sustainability is defined as three dimensions, environmental, economic and social
DefSust_UseofNaturalResources	Sustainability is defined as use of (natural) resources

Description of pedagogical approach	Different pedagogical approaches that are practiced by schools
-------------------------------------	--

Name	Description
Pedagogy_BuildingLearningPower	A strategy for developing independent learners
Pedagogy_CriticalQuestioning	Critical questioning from basic habits to the purpose of a project as part of the education
Pedagogy_DiverseLearningStyles	A recognition that children have different learning styles which need to be considered and catered for
Pedagogy_EnvironmentalStudies	Studies with a focus on environment and ecology
Pedagogy_ESD1andESD2concepts	Description of what ESD concepts are: learning about it and doing something about it
Pedagogy_ExperientialLearning	Pedagogy involves doing and experiencing as part of the learning process
Pedagogy_FlexibleLearningSpace	School space that allows teacher to be creative in their styles of teaching, and allows for differently types of learning
Pedagogy_LookingatRealLifeSituations	Recognition of bringing real life situations into the education
Pedagogy_OverdoingESD	A notion that there is no such thing as overdoing ESD as it is part of life
Pedagogy_ThematicCreativeCurriculum	Curriculum that is formed around themes and has a creative element to it (see memo)
Pedagogy_WellRoundedEducation	The perception that the child needs to have a holistic, well rounded education, where he develops his national curriculum skills but also life skills, awareness, etc.

Issues	General, specific and central issues that schools tackle. Central issues rise from the interviews as something that headteachers really focused their attention on and connected other actions to.
--------	--

Name	Description
------	-------------

ISS_CNTRL_Energy	School seeks to become carbon neutral
ISS_CNTRL_ResSchoolSpace	Central issue for this school is to expand and utilize the resource of the school space due to the increase of the population in the school up to 150%.
ISS_CNTRL_ResWoodlandsandFarm	Issues around saving woodlands as a resource and expanding the farm and embedding the two into the school curriculum
ISS_CNTRL_WholeChildDevelopment	School focuses on children and their holistic development though increasing and expanding on environment as learning environment and community cohesiveness
ISS_GEN_Ecology	General issue of ecology and environment
ISS_SPEC_Litter	Litter has greater affect on school because of the farm and its affect on animals

Motivators	Intervening conditions the ones that support school in moving forwards with the sustainable agenda, maybe intrinsic or extrinsic
------------	--

Name	Description
Motivation_Emotion_Enthusiasm	An intrinsic motivation for the school is to do things that bring enthusiasm and joy for both children and staff
Motivation_HeadT_PersonalValues	Intrinsic motivation for the headteachers that are moving their school to become sustainable or are at the beginning of their journey is their values (see memo)
Motivation_HeadT_PreviousExperience	There seems to be correlation between the headteachers' values and the work they do in their current school with their previous experience
Motivation_HeadT_Upbringing	
Motivation_MakingDifference	A new project or process takes place in a school if it is assessed to create difference either within the school or outside (see memo)
Motivation_MakingImpactonChildren	Having a positive impact on children is an intrinsic motivation for change in the schools, it is about children's education and well being as well as instilling values such as care for environment
Motivation_Money	Finance is a motivation factor, creating savings or making a profit allows the school to improve what it offers
Motivation_PoliticalDecision	An extrinsic motivation created by the government
Motivation_SchoolsEthos	An intrinsic motivation to create and to continue the change when the whole school agrees on the vision
Motivation_SchoolsExternalAssessment	How school is perceived/assessed by the external groups or individuals this also relates to their self perception (see memo)
Motivation_SchoolsInternalAssessment	Motivation comes from seeing that the action of the school has results, the feedback comes from more than one way (see memo).
Motivation_SelfPerception	Refers to how schools (HeadT) see themselves in relation to being sustainable and other characteristics, self concept theory (see memo)
Motivation_StudentsCareforEnvironment	

Primary school context	
------------------------	--

Name	Description
Accountability of the headteacher	Only headteacher has the position of accountability for what occurs in the school before the stakeholders and the government
Power Distribution	
Primary school level	A condition referring to the understanding and development of children on the primary level, and their ability to understand, take in, and remember only so much
Quick turn around	Schools are becoming a place where teaching position has a quick turn around making it less stable

Projects	The projects that schools speak about with regards to sustainable development (see memo)
----------	--

Type	Name
Project_AquaBox	A charitable project with element of usability, 'a water purifying' box
Project_Charity	Projects that are charitable, mainly sending money to other countries, except for few that are based on 'boxes'
Project_ClosingLoop	an activity that allows the school to close loops in its series of projects, establishing self sufficiency
Project_CommunityBuild	Developing old resources into the community oriented resource, extending the school grounds to the community.
Project_DayCelebrations	Short one-day celebrations, that focus on specific theme that the whole school takes part in, keeping the profile of the issues high
Project_EcoBuild	Long term project with long term results and a benefit to the whole school (see memo)
Project_EnergyAudit	Energy audit of the school done once by the member of the council in the sustainable school sector
Project_EnergyCampaign	The international 'switch off' energy campaign that schools took part in switching off lights in the classrooms
Project_EstablishingInternationallink	Schools establish links with other countries, and other schools, building empathy for other cultures
Project_FamilyMealscookingClub	Social and health educational yet enjoyable project, bringing children and their parents together to learn about healthy eating
Project_ForestSchool	A long term project to become a forest school (see memo)
Project_Gardening	Gardening and gardening club to teach children about food production
Project_HealthySchools	An award program for healthy eating and exercise (see memo)
Project_HedgehogBoxes	Students make boxes in the eco committee and sell them for profit
Project_HippoWaterTank	Investigative, water usage in the school project
Project_LightFittingStudy	A project that looks at the use of energy in lighting around the whole school, the investigative study however seems to take place on the top level rather than through the staff and students
Project_LocalEnvironment	Investigative studies that schools do out of the classroom about their community (see memo)
Project_LunchBoxWasteManagement	A project that focuses on recycling and minimizing waste from the brought lunch as a school

Project_MakingProfit	
Project_MicroGeneration	Energy generation project that involves the school and the whole of community
Project_PaperMail	Change in internal operation and the use of resource - paper, the project looks at reaching out to parents by email rather than mail
Project_Playground	Projects around playground area, either creating or improving the facility (see memo)
Project_Prototypes	Prototyping, and idea that comes from projects that were considered but didnt make it through due to their impracticality, such as wind turbine (see memo)
Project_RaiseMoney	
Project_RaisingAnimals	Students and staff raise animals both as pets and for slaughter
Project_RecycledInstruments	Project involved making instruments out of recycled materials led by a parent and instruments being used in the performance, a one off project
Project_Recycling	Recycling in school, but also collecting litter in the community (see memo)
Project_Residentials	Extra curricular activities that children and the staff participate in in the outdoors that create empathy towards nature (see memo)
Project_SharingSDKnowledge	School transfer their knowledge on sustainable development to other schools (see memo)
Project_Toilets	Internal project, renovation of the toilets to use less light and water as a result of children's suggestions to the school
Project_TravelPlan	Travel awareness campaign rather than an alternative travel plan (see memo)
Project_TwycrossZoo	Ongoing project learning about animals through the partnership of the local zoo
Project_WoodlandClub	Work that children do in the club that pertains to woodlands, the maintenance, building, etc.

Appendix G

A section of an interview analysis: data reduction process

Case: 3

School: Sustainable

Interviewee: Headteacher

The following is analysis based on the coding of an interview. The case is supported by the matrix queries that highlight the codes associated with the case, in this document only the codes associated with this case are shown to the left and to the right the amount of references that the code received. The description of the codes may be found in a separate document. The summary format is based on the research questions.

How does the headteacher (school) perceive ESD?

General: This question is unfolded to include headteacher's definition of sustainability, their philosophy on sustainability and its relation to education, the aims of the school that relate to sustainable development, and the pedagogy that is perceived to contribute to ESD.

Headteacher defines sustainability as an aspiration, and becoming sustainable as a process to reach that aspiration. The aspiration is not defined by the headteacher, but the problem of sustainable development, or what is perceived as unsustainable, is defined as 'diminution of natural resources' due to society's current development model of production and consumption. Headteacher notes that growth in consumption while creating decrease in natural resources has not led to greater happiness especially in children. A more sustainable society is perceived in relation to current society and is defined as one whose behavior is not so consumerism led, one that is critical of its consumer behavior, and one that seeks to minimize its impact on environment by caring for environment.

Headteacher notes that the school aims to work towards becoming more sustainable by caring for environment and by placing children at the center of what it does by involving them in creating the environment that they care for and are passionate about. Here the headteacher points to the philosophy of creating awareness about environment, and developing affinity with it through taking practical action. The focus of the school then is on itself and its local environment, and on developing its own sustainable culture and ethos. Its aim is also to create a positive impact on children. Putting children at the center of what school does by bringing issues, complex issues of sustainability, in a more simplified perspective where they can have practical input. *"You can make quite tangible differences to your impact by involving the children"* (Headteacher).

The current education within the school is based on environmental education that has been predominant within the school and continues to be so. *"Children despite ipods, iphones, PCs, playstations, Xboxes, they still care passionately about wanting to connect with the outdoors"* (Headteacher). However, by focusing on local natural environment and the ways to protect it the learning has been expanding to include the notions of the world at large. This, headteacher notes, has been done through experiential learning and children undertaking projects that focus on the real world problems and that create practical

difference.

2 : DefSust_Aspiration	1
3 : DefSust_ComplexIssue	1
5 : DefSust_MinimisingImpactonEnvironment	1
8 : DefSust_QuestioningConsumerism	1
12 : DefSust_UseofNaturalResources	1

3 : Pedagogy_CriticalQuestioning	1
5 : Pedagogy_EnvironmentalStudies	2
7 : Pedagogy_ExperientialLearning	3
9 : Pedagogy_LookingatRealLifeSituations	1

3 : Philosophy_HeadT_AwarenessAffinityPracticality	5
4 : Philosophy_HeadT_ChildrenattheCenter	3
6 : Philosophy_HeadT_HolisticApproach	1
8 :	2
Philosophy_HeadT_MinimizingImpactonEnvironment	2

4 : SchoolAim_CurriculumEnrichmentthroughSD	2
6 : SchoolAim_ImprovingWhatSchoolOffers	3
8 : SchoolAim_MakingImmediateSchoolSust	1

What are the approaches towards ESD that school exhibits?

One of the conditions that had an impact on headteacher's approach upon his arrival was the school that he was inheriting, the school's culture and the physical elements of the school. What headteacher inherited was a school that already had a history in environmental education, small holding with some animals, and it was adjacent to the woodlands. The headteacher therefore was not starting at ground zero. His aim was to consolidate what was already there and to expand on it. The overarching aim was to develop a culture and ethos of the school that would be embedded at the heart of the school to reflect the values of care for the environment and to include involvement of the children. The focus was on the immediate environment and available resources while the central issue for the school became the protection and utilization of woodlands and the farm.

The protection and care of natural environment, woodlands and the farm, is an operation embedded within the school. The inherited woodlands, a natural resource of local community was closed, deemed unsafe, and had potential to be lost to building development. The headteacher aimed to bring the woodlands into the grounds of the school, to protect the resource *'because once it's lost, it's lost'* (Headteacher) and by embedding it into the grounds also embed it into the education and into the operation. The project has been one of partnerships between the council, external organizations including WWF, Nottinghamshire Wildlife Trust, the Forestry Commission, the school and the woodlands. The organisations played a supportive role for the school to become involved

with the conservation agenda, providing information and developing skills with the headteacher to undertake maintenance program and to fund the project. One of the main conditions for the provided support came from common philosophy that it is important to protect and to take care of the woodlands. The relationship between the school and the woodlands was based on the notion of care and ownership where the school was partly responsible for maintaining the natural resource, the woodlands. Farm as a natural resource has also been developed and expanded. Old practices of Anglo Saxons were used as a source of idea to inform the development of the farm resulting in wealth of produce and animals. The growing of food and raising of animals have become embedded into an ongoing operation of the school.

Headteacher intertwines the value of taking care of environment and creating an environment that children feel passionate about. The goal is to widen the ownership of the school through involving the children in activities that they want to engage with. This view led to a goal of increased student engagement in the school's process of becoming sustainable. Partly this was done through changed structure of the school by establishing of the eco team and clubs that the students take part in and are heavily engaged in. *"Tonight there is Woodland club....pupils produce an agenda and that's what is happening tonight"* (Headteacher) The purpose of these groups is to contribute to sustainable operation of the school while their success rests on the engagement and passion of the stakeholders that are involved (including staff and parents). While the headteacher embedded the new structures into the school they in turn embedded the sustainable operations into the school. For example animal club does deep cleaning, or eco team produces reports on the use of electricity. One of the approaches headteacher took to embed sustainable values into the culture and ethos of the school was giving priority to the voice of the eco team in the decision-making operation within the school. This meant changing the operation of the governing body meeting by adding eco team representatives along with the student council on the governing meeting agenda. This the headteacher noted was extending the boundaries of how things are usually done. This not only raised the importance of the eco team and sustainable development issues, but also was a way to create a profile for the issues for the governors, to educate them and ultimately to gain their support. The importance of eco team is also supported by their involvement in the assemblies, another change to the operation of the school. Having space to lead their own assemblies helps the team to keep the profile of the issues a priority for the whole school. Expanding opportunities for children's involvement supports headteacher's vision that the children have a voice that needs to be valued by the school, and that they can make a tangible, practical impact.

As the school was bringing natural resources into the grounds and expanding children's involvement with sustainable agenda through extracurricular activities, it was able to reflect on its work through Ofsted and to critically assess itself. Ofsted became a source for an idea of further embedding sustainable development into the school by working with the curriculum. *"Because if you don't get it into their learning its still becomes a bit of a side issue"* (Headteacher 3) This led to a new goal for the school to make curriculum more relevant to the school's context and its values about protecting the world. This was done through embedding it across the school. The involvement of the teachers, their support of the values, and their ability to construct the curriculum became an important condition for

success. Headteacher embedded sustainable development to be a part of term curricular planning. The curriculum was to include elements of National Curriculum, as well as be relevant to what school does with sustainability agenda, and to embed the grounds, especially outdoors into the lessons. Sustainable development became embedded across the school, the grounds, the operation and the curriculum, and across the years as every year had a theme embedded into the curriculum on sustainability or internationalism. The outdoor grounds were embedded into the curriculum as platforms for play and learning. For example, learning about and from hedgerows the theme spanned across the curriculum. The operations of the school became embedded into the curriculum, for example working on designs of the recycling bins, or learning about Uganda due to the links with the schools in Uganda.

One of the aims of the school is to engage children in learning and one of the ways to do it is to work with children's natural curiosity about the world around them and working on things that make practical difference to their world. Children learn through being part of the school not only in the classrooms but making decisions and being part of the school's other operations. Students are source of information for the school as they discuss issues about their school such as position of the farm or the type of the gates it should have, they inform the school on electricity usage. The complex notions of life and death and litter are explored during the time on the farm where some animals are raised for slaughter and where litter becomes a real issue as the animals get hurt. This exploration of the issue on practical level moves children's level of understanding to a greater level and away from abstract 'litter is bad' idea. However, some notions although embedded into the school's operation still need to be reinforced by the staff to the students, for example switching the lights off. This is due to the condition of a school being primary, where children are young and their awareness and ability to remember things is limited. Consistent message is an approach to further embedding the behaviors in the students.

One of the approaches that the school practices is embedding sustainable development across several dimensions, creating self sustaining loops. The school's grounds, the farm, generates some food for operation of feeding children. The grounds is also embedded into the operation of generating money for keeping of the honey, which is used partly in the flapjacks that the school kitchen makes for the eco team and the governors to discuss issues about the farm and other sustainable development within the school. Links are also created with local partners such as parents as in the case of a paper procurement.

Further development of the culture is based on bringing in the people that share the values of the school. This is part of the operation hiring, where sustainable values are embedded into the hiring process, new staff will not get hired unless it has sustainable values. Such process allows the headteacher to practice distributed leadership, it allows the vision of the school to develop and move forward rather than experiencing problems from within the organization. *"You want on board passionate ambassadors, so there are no negative blockers"*(Headteacher). Sustainable development continues to be embedded not only in the operation of the hiring but also into the staff's contribution to the school through curriculum and other operations within. Another approach to consolidating sustainable ethos of the school was done through acquiring of the green flag from eco schools, which allowed the school to further build perception of self as a sustainable school.

The school has seen development and consolidation of its sustainable culture, however, the headteacher noted that once you become good in one area you may look into developing the other. This shows the school to be proactive and to continuously to extend its practices. One of such extended practices has resulted when the school applied and was selected for the project, a partnership between this school, other six schools, WWF, London Institute and National College that focused on the goal of sharing sustainable knowledge and creating impact and promoting its values to wider community. This may be considered as continuation of developing one's culture and one's perception of self as an expert in sustainable development. The partnership was based on sharing one's knowledge but also learning from others' journeys of becoming sustainable. The expertise of the school was further recognized when the school was invited to participate in a nation-wide project.

44 : Condition_Inheritance	2
3 : Approach_EmbeddingIdeas	3
6 : Embedding_AcrosstheSchool	2
7 : Embedding_AcrossYears	1
8 : Embedding_BehaviorUnderstanding	2
9 : Embedding_Curriculum	2
11 : Embedding_CurriculumPlanning	1
12 : Embedding_Ethos	3
13 : Embedding_EthosintoCurriculum	1
14 : Embedding_GroundsintoCurriculum	1
16 : Embedding_GroundstoOperation	2
17 : Embedding_OperationCareforEnvironment	1
19 : Embedding_OperationEcoTeam	2
20 : Embedding_OperationHiring	1
21 : Embedding_OperationProcurement	1
22 : Embedding_OperationRaisingAnimalsGrowingFood	2
23 : Embedding_OperationRecycle	1
27 : Embedding_SustProjectintoCurriculum	2
28 : Embedding_SustThemesintoCurriculum	1
2 : Approach_CreatingSuccession	1
29 : Approach_ExtendingCurrentPractice	1
33 : Goal_CriticallyLookathowCurriculumOperates	3
34 : Goal_CriticallyLookatSchoolFunctions	2
36 : Goal_ToAcquireGreenFlag	1
39 : Goal_ToEngageStudentsinLearning	2
40 : Goal_ToEvaluateOneself	1
41 : Goal_ToExpandFarm	1
42 : Goal_ToHavenoImpactonEnvironment	1
43 : Goal_ToImproveFarmOperation	1

44 : Goal_ToMakeEcoTeamProminent	2
45 : Goal_ToMakeEnvLearningResource	1
47 : Goal_ToSaveResource	2
48 : Goal_ToShareKnowledgewithOthers	1

52 : Approach_HavingConsistentMessage	2
53 : Approach_ImpactingWiderCommunity	4

56 : Involvement_DistributedLeadership	2
57 : Involvement_EcoTeam_Assemblies	1
59 : Involvement_EcoTeam_Fundraising	1
60 : Involvement_EcoTeam_MonitoringFeedback	1
61 : Involvement_EcoTeam_ParticipatingGovernmentMeetings	2

G

Appendix H

Case 1 Questionnaire analysis

Case: 1

School: Sustainable

Answers: Staff and teachers.

Number: 8 participants

Type: Acting head teacher (has been an acting headteacher for 2 months/ as deputy 10 yrs), Deputy headteacher (has been deputy for 2 months/ another position 14 yrs) foundation 2 teacher (2 months), high level TA (3 yrs), Receptionist and Admin Clerk (3 yrs), SENco (3 yrs), Teacher (6 yrs), Teacher (3 yrs).

The following is a questionnaire analysis based on the coding of the questionnaire conducted with the school's staff. The analysis is supported by the matrix queries that highlight the codes associated with this case. The summary format is based on the research questions. **The number of participants in the questionnaire is one of the highest.**

How schools' staff perceive ESD?

Amongst teachers and staff awareness of education and sustainable development was high. Out of eight participants in the questionnaire, seven said that they are familiar with the SD term. For the school staff sustainable development (SD) means recognizing that current actions, decisions and plans have impact on the future drawing link between now and the future. *'Future rather than quick gains'* is considered both by the staff in their actions and planning as well as explored in the education of the students. In staff's and school's actions SD means minimizing the impact on local and global environment by *'saving energy and other resources'* and 3Rs. Here the link is drawn between the school's local environment as it is situated and is linked to the global environment.

The main definition of ESD and the aim of the school regarding ESD, however, are based on the students and their education. The overall aim is to influence the students by developing their capacity to address environmental and development issues now and in the future. This is sought through engaging them with their own practices and behaviors, considering how one may improve their own quality of life without damaging the planet. Group behaviors are also looked at and opportunities are provided for students to discover how they as groups and community may improve the quality of school life without damaging the planet. In addition students are provided with ways to create understanding about the needs of the environment and society at large. Here the focus is on the wellbeing of the planet rather than personal wellbeing and students engage with opportunities and skills to protect, improve and care for the local environment and the world.

The students are engaged through curriculum, specific projects and initiatives. Education is creative and thematic, whereas themes are based on values, with sustainability value being essential. ESD is defined as a continuous, building up process, which is engaged with throughout the years for *'children to gain a growing understanding of different aspects of*

sustainability’.

The use of such language by staff as ‘discover, engage, providing opportunities to create understanding’ suggests that pedagogy is not transmissive but is rather transformative and experiential.

18 : DefSust_VisionforFuture	4
19 : DefSust_UseofNaturalResources	1
26: DefSust_MinimisingImpactonEnvironment	2
27 : DefSust_InformedChoices	2
30 : DefSust_Awareness	1

48 : SchoolAim_InfluenceChildren	4
----------------------------------	---

3 : Pedagogy_ThematicCreativeCurriculum	2
---	---

What are the approaches towards ESD that staff mentions?

Seven out of eight staff and teachers expressed awareness about education for sustainable development within their school. In particular there is a consensus on the sustainability values to be part of the ethos, which is embedded in all aspects of school life including curriculum, daily routines, and school operations. Staff and teachers proactively embed ethos into the curriculum. Five out of eight respondents noted that they include ESD into the curriculum. They express this to be one of their goals, to always look for an opportunity to integrate sustainable development in what they do, ‘Looking for every opportunity to teach the children about looking after themselves, their community and the planet’. SD is incorporated throughout the school in the curriculum of each year group; themes are planned for the pupils to engage with the range of values and topics that build upon each other. How frequently SD is embedded in the curriculum does vary from teacher to teacher, one teacher notes that sustainability is present within the curriculum every lesson, whereas others note that SD activities occur once a week. Teachers integrate such local and global SD themes as energy and water saving, low carbon emissions and recycling into the curriculum. They also access local resources, the school grounds, and integrate it in their work: ‘using our own fruit and veg to learn about growing and cooking’ or learning about how rain water is used in their own toilets.

The SD notions that are introduced in the classroom are further embedded in the behaviour of the children. Daily routines of switching off lights, recycling, and notion of waste in general are highlighted by everyone including Dinner staff to the children. This showcases the whole school approach to ESD. The SD behaviour is not only encouraged in students, but is also mentioned as something that the whole school does. For example there is an overall low usage on paper within the school which is also supported by an ethically procured eco printer.

Six out of eight respondents were also aware of the SD to be embedded within the operations of the school. On-going operations of waste management and recycling, ethical

procurement policies, and travel plan were the most cited. In relation to travel plan staff puts emphasis on health benefits rather than use and conservation of fuel. Some teachers also mentioned utilizing resources such as water, through water harvesting, energy, through the use of renewable energy sources and food miles through growing of local fruit and veg.

Some operations may be viewed as the projects and initiatives that the school is involved in. Two of these projects are a farm and the school garden. The school farm includes chickens and pigs with the highest standards of welfare, whereas the school garden involves wildflower, fruits, veg, etc. These projects just like school operations are long term and on-going, and become an asset in the school curriculum. Along with travel plan, these projects also involve and are based on participation of students, staff and parents. On another side of the spectrum, the school is planning to participate in a short term, one-off fruit tree planting project. Whilst these operations/projects were initiated within the school, staff also mentioned being involved in the projects that are community based. An on-going local community project that promotes SD locally is called Greening Bowbridge. The school outreaches to parents to take small steps with their children to become more sustainable and *'works together with their families to complete and maintain these'*. ESD therefore goes beyond the school and into the community. Save Energy Save Money project is an energy campaign that brings institutions together to reflect on the use of energy. For the school this means reassessment of its practices and continuous improvement. It also situates the school within a national campaign taking it outside of its local parameters.

Six out of eight staff were not only knowledgeable of these projects/initiatives but also described their role in them as participants, supporting or leading. One of the leading positions was described as *'taking the children in groups to plant and manage the year group plot'*. The overall involvement of the staff therefore in SD is high and showcases a whole school approach. The involvement of staff may be based on volunteering, from project to project, or as half of the participants answered they have been designated SD work, for ex. one of the teachers has a permanent position as a *'learning outside classroom coordinator'* whilst other was sent out *'to attend a lecture in London'*. The involvement therefore is encouraged partly through distributed leadership as well as continuous in service training of staff, sharing of ideas, and staff being inspired by ideas and work outside of school, such as SD lectures in London.

Most staff noted that SD is heavily promoted as the school seeks to involve the whole school in SD values as well as to go beyond into the local community and to other schools. SD is one of the main topics in the assemblies, which reaches out to the whole school. The school proactively embeds SD values into the local community and into the homes of children by looking for opportunities to educate them. It does so through partnering with parents in a project Greening Bowbridge, sending messages in newsletters and inviting parents and community for special presentations. One staff also noted that the headteacher outreaches to other schools with workshops and lectures. This shows that the profile of SD within and outside of the school is continuously kept high.

148 : Goal_ToShareKnowledgewithOthers	1
168 : Goal_BecomingCarbonNeutral	1
57 :	2

Opportunity_IntegratingESDandCurriculum	
---	--

120 : Embedding_SustThemesintoCurriculum	1
125 : Embedding_Operations_Awareness	2
126 : Embedding_OperationRecycle	4
127 : Embedding_OperationRaisingAnimalsGrowingFood	1
128 : Embedding_OperationProcurement	4
135 : Embedding_GroundsintoCurriculum	2
136 : Embedding_EthosintoCurriculum	1
137 : Embedding_Ethos	2
138 : Embedding_CurriculumPlanning	2
140 : Embedding_Curriculum	5
141 : Embedding_BehaviorUnderstanding	3
142 : Embedding_AcrossYears	1
143 : Embedding_AcrosstheSchool	2

4 : UtilizingResource_Water	1
7 : UtilizingResource_Energy	1

23 : Approach_Promote_Awareness	1
15 : Approach_PromoteSustainability	1
16 : Promote_WithintheSchool	2
17 : Promote_ToParents	1
18 : Promote_ToOtherSchools	1

76 : Approach_InvolvingStakeholders	1
77 : Involvement_WholeSchoolApproach	1
78 : Involvement_Students_UnderstandEnvUseof	1
102 : Involvement_Staff_Training	2
104 : Involvement_Parents_Projects	1
106 : Involvement_Parents_Educating	2
116 : Involvement_DistributedLeadership	2

67 : KeepProfile_ThroughAssembly	1
5 : Time_OngoingProjectsCurriculum	4

32 : Project_EcoBuild	1
28 : Project_EnergyCampaign	1
24 : Project_GreeningBowbridge	2
25 : Project_Gardening	3
13 : Project_RaisingAnimals	2
11 : Project_Recycling	3
7 : Project_TravelPlan	4

2 : Projects_TreePlanting	1
3 : Projects_Awareness	1

What staff perceives to be conditions for the school in order to be able to move towards SD?

One of the main conditions that all staff agreed their school exhibits is the priority it gives to the sustainable development. SD is part of schools' values and its ethos. In particular ethos of the school is to *'improve the capacity of future generations to address environmental and developmental issues'*. Ethos and the values are prioritized by the whole school. As noted by all respondents it is an ongoing priority for the school, the Head teacher and is also an ongoing personal priority for five out of eight respondents and somewhat a personal priority to others.

The SD values are embedded into the school activities, which allow the school to move towards becoming sustainable. The activities are ongoing from curriculum to projects, with additional few one-off activities that the school is able to incorporate. The success of most activities is based on the support, leadership and enthusiasm of the school staff. Whilst all three conditions are important, individual enthusiasm felt by the staff with regards to SD work enables them to continuously provide support: *'My role is to encourage and enable all children and adults to achieve'*. In addition six out of eight teachers take a more objective look at their work with SD as they undergo performance management. Performance management is an important condition as it allows for reflection, cooperation between teacher and senior staff and planning and when coupled with personal enthusiasm provides a strong basis for further development.

One of the ways for the school to move forwards is to incorporate new knowledge and ideas into what school does. The source for such ideas and knowledge is expansive in the school, and involves staff, parents, head teacher, governors, children, other organisations and community. The focus was on head teacher (6 respondents) and staff (6 respondents), governors (4 respondents) and children (3 respondents). This suggests leadership is one of the main conditions for change and that school is open to new ideas and has means of engaging with its stakeholders to listen and incorporate the ideas into its planning.

6 : Time_OngoingProjectsCurriculum	4
17 : Support_Staff_SchoolAgenda	1
19 : Support_Staff_LeadingParticipatinginProjects	3
21 : Support_Staff_Enthusiasm	2
22 : Support_Staff_EmbeddingintoCurriculum	3
61 : Condition_School_Ethos	2
72 : Condition_PerformanceManagement	1

Appendix I

(A Section of) Case 4 data analysis

The following is a within-case analysis based on the data collected from one of the six primary schools in this research. The purpose of the data collected for this case is to explore SD in the primary schools.

School Profile

Case 4 school is a mixed, community, larger than average primary school (Ofsted, 2012) maintained by the local authority with a growing intake from 444 children (Ofsted, 2009) to 549 (Ofsted, 2012). It is an inner-city school with 26 cultures (School website, 2012) and 79% of students speaking English as an additional language, which is four times the national average (Ofsted, 2012). The number of students entitled to free school meals is higher than the national average, whereas the proportion of students with disabilities is average (Ofsted, 2012 and Ofsted, 2009). The school “exceeds the government’s floor standard, which sets the minimum expectations for pupils’ attainment and progress” (Ofsted, 2012). The structure of the school has been defined as “complex” that is run by the executive head teacher, operational head teacher (School online article, 2010) and the senior leadership team (Ofsted, 2009). The current staff at school consists of total 24 teachers, 43 teaching assistants and 17 support staff (DfE website, 2012). The school has recently received an “Outstanding” in its recent Ofsted report (2012).

Data collection and analysis specific to the school

School Status	Non – Sustainable
Interviewee	Executive Head teacher (12 years)
Questionnaire respondents	Class teacher (1 yr), Class Teacher (2 yrs), Head of KS1 Department (3 ½ yrs), Teacher (3 yrs), Teacher (3 yrs), Teacher (4 yrs), Teacher (4 yrs), Teacher (5 yrs), Teacher/SEAL Co-ordinator (8 yrs), Teaching Assistant (1 yr), Teaching Assistant (1 yr), YR 5 Teacher (2 yrs).
Documents	Ofsted Reports (Jones 2009, Phillips, 2012), Drove Primary School Website (2012), Online articles (Hilley, 2009; Wallin, 2009; Court, 2009; Morgan, 2010)

The school has been selected for this research as one of the three schools that are currently not involved in SD but showcased an interest in doing so. To explore current status of SD in the school three sets of data were gathered and analysed: an interview with the head teacher, a questionnaire with staff, and additional documents such as school website, Ofsted Reports, and online articles.

Open-ended contextual interview was carried out on the premises of the school with a head teacher. The purpose of the interview was to engage with an overall reflection on sustainable development in the school as perceived by its leader. A set of coding categories developed through an open coding of the interviews’ data set was used to run matrix

queries individual to the school. This data was then used to perform individual interview analysis.

A questionnaire (available in online or printed versions) was designed for staff and teachers to provide a supporting evidence for the SD in the school. 12 participants replied to the questionnaire. The number of the respondents is the highest of all six school case studies, but is only 16.2% of the overall school staff. However, online version of the questionnaire probed the respondents to provide higher volume of data in comparison to the printed version responses in other schools. The type of respondents included teachers and teaching assistants with various levels of expertise and years of experience providing the research with rich data. The analysis of the questionnaire is based on the coding categories developed during the analysis of the interviews, and is supported by the matrix queries individual to the school.

Online public access resources such as school's website, several Ofsted reports and additional articles about the school also have been included into the overall within case analysis.

THE SCHOOL AND ITS PERCEPTION OF SD

Context

This school is not known for its work in sustainable development (SD). The external documents such as school website (School website, 2012), Ofsted reports (Ofsted, 2009 and Ofsted, 2012) as well as other articles about the school have no mention of the school working towards SD. However, the head teacher and almost half of the staff who responded to the questionnaire (5 out of 12) have a general awareness of what SD and education for sustainable development (ESD) could be.

Overall definition

Head teacher and staff define SD as a general concern with the environment for example global warming, use of natural resources, sustainable materials and general environmental issues. The general view of the respondents is that a **school could minimize its impact on environment by changing its behavior** through addressing specific issues. In particular head teacher pointed out that a sustainable **school would utilize natural resources** through *"making it [self] energy efficient, harvesting what we can, in terms of rainwater, grey water matter, recycling, reducing also product cost, making it paperless campus would be great"* (Head teacher, 4).

Head teacher and staff also recognize that ESD refers to creating an impact on the students. Staff views the need for **teaching sustainability** and its benefits to the students, **changing their behavior as well as modeling sustainable lifestyle within the school**. This is supported by the head teacher, who views change towards SD as **transformational change in a whole fabric of the school**. *"...if we were to look at making this school particular more sustainable and energy efficient and eco-friendly, I will want there to be a curriculum impact on the kids. So it's not just about the bricks and water and the building, it's about the philosophy, culture, and the ethos of the school, which would go along with that sort of project"* (Head teacher, 4).

SCHOOL APPROACHES TOWARDS EDUCATION AND SD

Main Approach: Responding to the Need- Expansion of the Space

The overall aim of the school is to improve what it offers and to have positive impact on children (Headteacher, 4 and Staff Questionnaire, 4). The school experiences some external issues that are specific to the school and the need to respond to these issues drives some of the school's improvement and developmental approaches.

For example, the school showcases the need to address an issue of space. Due to the *"increase of number of births, the shortage of school places in the local community is increasing"* (School online article, 2010) as a result, the expansion of the school was proposed by the LA and accepted by the school (ibid). This need to expand grew into a goal for the school to create space to accommodate rising number of children, from 444 to 549. The approach of the school has been to utilize money and to utilize space in such a way as to create the needed space for less money. *"We are going up to three form and it's cheaper to refurbish and to change the structure of this building, this campus, then to build one form entry school"* (Head teacher, 4). Head teacher extended the boundaries of space-creating opportunities by creative shift in perception and critically inquiring *"what can be done with the space instead of traditional build?"* (Head teacher, 4). This led to issue being addressed in more than one way. The space is created through its physical alteration as well as through adaptation of flexible learning space pedagogy.

The physical alteration happened through refurbishment of the school space. Unused spaces were identified (toilets on one end of the school) and taken out, two buildings were connected to create an extra classroom (see Image 1), extra space was built on top of the nursery and the small green patch of the school has been removed to build a multi use playground. The school made some decisions that head teacher relates to SD during the refurbishment process. For example, eco credentials were included into some of the construction. *"Sustainable materials have been used, non carcinogenic and non health hazardous production of those materials, the fabric is very, very thermally efficient..."*(Head teacher, 4). Another strategy was *'building in opportunities'* (Head teacher, 4) to reduce waste. This was used during refurbishment, where the panels in a conservative area are easily removable, allowing the school to sell them back due to condensation problems. And as the school has no playing fields it utilized a green patch to help children to stay healthy. *"Although I will be taking out the piece of grass, I will be replacing it with the sustainable area that can be used all the time to improve the quality of health"*(Head teacher, 4).

Space was not only achieved through the physical alteration but also through the pedagogy of flexible learning, where the same space may be used in multiple ways. *"Flexible learning spaces, which is a brand new concept in schools...what I am looking at in the flexible learning space is to be able to adapt that space, according to the learning style of what you are teaching..."*(Head teacher, 4). However, while head teacher views flexible learning space as a sustainable approach to create *"more space for less money"*, it is not mentioned by the teachers and staff in the questionnaire.

Main Approach: Responding to the Need- Diversity of the Students.

An additional significant issue that the school experiences, is the diversity of its students. There are *"40 different home languages and 26 cultures"* (School website, 2012) in the

school with a high percentage of children not speaking English (Head teacher, 4) and *"children enter(ing) school working at levels well below those expected for their age"* (Ofsted, 2012). The goal for the school is to preserve diversity of students while engaging all students in learning and developing as *"rounded and independent individuals"* (Staff Questionnaire, 4). The school approaches this through several strategies. The diversity of students presents pedagogical challenge and therefore teaching combines old and innovative methods including flexible and kinesthetic teaching styles to accommodate different learning styles of the students. In addition, there is a strong focus on personal, social, health and economic (PSHE) education and supported by the school's *"humanist values of equality and diversity"* (Head teacher, 4).

Pedagogy

The school works with a diverse group of students who need to be engaged in multiple ways. *"So the school has got a good tradition of thinking differently about education partly because of our client group"* (Head teacher, 4). The school places its students at the forefront of what it does, *"our biggest asset ...is knowing your child both academically and emotionally"* (School website, 2012), which leads it to the development of varied and innovative approaches to education. Moving away from traditional or *"lecture type of teaching"* the school is involved in *"visual, kinesthetic, multisensory type of learning"* (Head teacher, 4). Ofsted (Ofsted, 2012: 5) described an example of the school engaging students in reading through *"life-sized characters appear[ing] all over the school and pupils [could] be seen taking on the mantle of the characters, bringing reading to life."* The kinesthetic approach the school applies is viewed by the head teacher as a pedagogy that is linked to SD. *"...and that [kinesthetic learning] lends itself to a sustainable agenda, because it is all about seeing, feeling and doing and so on"* (Head teacher, 4). Another approach to engaging students is through the pedagogy of flexible learning which is embedded in the grounds of the school. Different spaces are created for different tools of inquiry that the child may want to use, for example book library and computers may be found as two adjacent learning spaces (Image 2).

Providing students with skills of independent learners and thinkers is part of PSHE and BLP (building learning power). This is not the taught curriculum, but *"the other part of the curriculum"* (Head teacher, 4) that is essential to the development of the whole individual.

The school teaches skills, the four Rs being resourcefulness, reflection, reciprocity and resilience that are viewed by the head teacher as part of sustainable agenda. *" We need these four Rs in order that we think of things in different ways we are willing to adapt, to communicate with others, to lead others, to use those problem solving skills to achieve the same aim but maybe in the more sustainable or eco-friendly way"* (Head teacher, 4).

Teachers do not mention or view skills to be part of sustainable agenda but there is some recognition that SD would be part of the PSHE if it was to be embedded into the school. *"It*

(ESD) is an area that would be considered alongside any link to the 'positive contribution and economic wellbeing' strands of the ECM Agenda' (Staff Questionnaire, 4).

Most teachers do not view SD to be part of their curriculum nor is it something that they do independently in the classroom. However, there is one exception where teacher embeds it into the work, bridging SD issues and a BLP skill (reflection), together: *'When looking at animals or parts of the world we address issues regarding our actions'* (Staff Questionnaire, 4).

Projects

One of the aims that the school pursues outside of its curriculum, and as part of its PSHE, is healthy living. The theme runs across several projects that embed healthy living within the school as well as outside in its local community. Change for Life Dance project involved pupils, parents and teachers, who sought to introduce dancing into a local community as a way to get healthy (Staff Questionnaire, 4). Head teacher and the school invested in the conversion of the green patch into a multi game use area *"to improve the quality of health, improve the quality of sports, games and such things at the school"* (Head teacher, 4). Although the project has been a one-off project, it will have a continuous impact on students going to the school. The head teacher also considers an outdoor gymnasium on the roof of one of the buildings, which does not only create extra space for children in the school to sustain their well being but also may impact wider community and improve its well being as well. *"I'm going to raise the roof, and create an outdoor gymnasium on the top so we've got an additional space that can be used for our school and for communities after school and families"* (Head teacher, 4).

Appendix J

	Case 1 headteacher has holistic SD perspective	Case 2 headteacher focuses on specific eco issues	Case 3 headteacher has holistic SD perspective	Case 4 headteacher has understanding of SD issues, connecting it to society at large	Case 5 headteacher perceives SD as specific eco issues
How headteacher (school) perceive ESD?	SD activity seeks to create great impact within and outside of school	SD activity tailored to children	SD activity is focused on children and local environment	change in school focuses on the immediate needs	SD change focuses on children and immediate school
What are the approaches towards ESD that school exhibits?	very SD active creating ESD culture	very SD active creating eco-schools culture	very SD active creating ESD culture	not SD active emphasis on solving the needs	some SD activity beginning to create eco schools culture
What are the barriers that the school experience to move towards ESD?	working with few issues in depth	working with many issues at different levels	working with few issues in depth	working on few issues in depth	working on few issues at different levels
What are the conditions for the school in order to be able to move towards ESD?	proactive in seeking SD opportunities	passive in seeking SD opportunities	proactive in seeking SD opportunities	proactive in seeking change opportunities	somewhat proactive in seeking SD opportunities
	values of the school vs. the values of the community, government, general mindset, business as usual model	too much dependence on the outside support	complexity of SD makes it difficult to work towards it	personal values vs. values of educational system	priority of the school vs. priority of the government
	Headteacher leads the change + leadership distribution	Headteacher facilitates rather than leads the change + leadership distribution	Headteacher leads the change + leadership distribution	Headteacher leads the change	Headteacher initiates change, and then facilitates + leadership distribution
	building of SD support	strong SD support exists	SD support exists + is build	general support exists	SD support exists + building it
	inheritance (?) practicality/making difference	inheritance (+) practicality/making difference	inheritance (+) practicality/making difference	inheritance (-) practicality	inheritance (?) practicality/making difference
	ESD part of ethos ongoing ESD development	eco schools part of ethos some ESD development	ESD part of ethos ongoing ESD development	not part of ethos change is ongoing	eco schools part of ethos some ESD development
What are motivations within the school that wish to pursue ESD?	Perception of self as a school working towards SD	Support of local community/parents, perception of self as eco school	Perception of self as SD school	Motivation for moving forward is perception of self as innovative/successful	Making impact on children

Appendix K

Design as an approach to education for sustainable development.

A round table discussion took place amongst five professional designers and design academics during Service Design Conference '10 in Berlin, to investigate the question: 'How design and design thinking can help UK primary schools to address issues of Sustainable Development (SD) ?' The insights from this discussion will be used in research undertaken at Loughborough University, UK.



Participants considered the potential of design and design thinking to work on different levels and scales within the context of primary schools as public service and their change towards SD. During the discussion primary schools were perceived as complex systems, and SD as a multifaceted area that addresses environmental stewardship, social equity and justice, and economic issues.

For change to happen four stages were considered:

1. Creating entry for schools into understanding of the topic;
2. Establishing shared vision amongst stakeholders;
3. Turning vision into concrete projects;
4. Following progress.

The notion of design as an enabler of change rather than dictator was developed by taking into account its specific uses within the context of schools and SD. Design has potential to:

- communicate and make the topic of SD more available and engaging to the teachers and other stakeholders;
- inquire about the individuals, their motivations and interests;
- activate individuals within the system to work on sustainable issues;
- understand parameters of the schools and their local communities to design within and for the parameters while incorporating all dimensions of SD ;
- ask what the future looks like and develop common vision of a sustainable future with stakeholders;

- create opportunities that minimise the entry level for schools into understanding of and action towards SD;
- inspire.

Two design values were identified relevant for the context:

- **Simplicity**
For SD to see uptake within schools where time and money are scarce resources, simple techniques and concepts are required.
- **Relevance**
Design should be relevant to individuals and to school communities it seeks to change.

For more information please contact at K.Kuzmina@lboro.ac.uk
Ksenija Kuzmina, PhD student, Loughborough University, UK

Moderator: Ksenija Kuzmina, Loughborough University, UK

Panelists: Ré Dubhthaigh, Radarstation; Tory Dunn, ThoughtWorks; Toke Stub Barter, Icph; Lesley McKee, University of Dundee, Scotland.

Appendix L

ETHICAL ADVISORY COMMITTEE



Ethical Clearance Checklist

(TO BE COMPLETED FOR ALL INVESTIGATIONS INVOLVING HUMAN PARTICIPANTS)

If your research is being conducted off-campus and ethical approval has been granted by an external ethics committee, you may not need to seek full approval from the University Ethical Advisory Committee. However you will be expected to provide evidence of approval and the terms on which this approval has been granted.

If you believe this statement applies to your research, please contact the Secretary of the Ethical Advisory Committee for confirmation.

If your research is transferring into Loughborough University and approval was obtained from your originating institution, there is a requirement on the University to ensure that appropriate approvals are in place.

If you believe this statement applies to your research, please contact the Secretary of the Ethical Advisory Committee with evidence of former approval and the terms on which this approval has been granted.

It is the responsibility of the individual investigators to ensure that there is appropriate insurance cover for their investigation.

If you are at all unsure about whether or not your study is covered, please contact the Finance Office to check.

Section A: Investigators

Title of Investigation

Approaches towards Education for Sustainable Development Study

Name, Status and Email Address of Senior Investigators (University Staff Research Grade II and above):

(Please underline responsible investigator where appropriate)

Ksenija Kuzmina, PhD student 2nd year, K.kuzmina@lboro.ac.uk

Dr Rhoda Trimmingham, Lecturer, R.L.Trimingham@lboro.ac.uk

Department:
Design School

Name, Status and Email Address of Other Investigators (other University Staff and Students):

Department:

A1. Do investigators have previous experience of, and/or adequate training in, the methods employed? Yes No If No, Please provide details below

A2. Will junior researchers/students be under the direct supervision of an experienced member of staff? Yes No If No, Please provide details below

A3. Will junior researchers/students be expected to undertake physically invasive procedures (not covered by a generic protocol) during the course of the research? Yes No If Yes, Please provide details below

A4. Are researchers in a position of direct authority with regard to participants (eg academic staff using student participants, sports coaches using his/her athletes in training)? Yes No If Yes, Please provide details below

If you have selected one of the answers above marked with an + please provide additional information on how you intend to manage the issues (please continue onto a separate sheet if required), then submit this checklist to the Secretary to the EAC:

Section B: Participants

Vulnerable Groups Will participants be knowingly recruited from one or more of the following vulnerable groups?

- B1. Children under 18 years of age (please refer to published guidelines) Yes No
B2. People over 65 years of age Yes No
B3. Pregnant women Yes No
B4. People with mental illness Yes No
B5. Prisoners/Debtors Yes No
B6. Other vulnerable group (please specify) Yes No

If the procedure is covered by an existing generic protocol which refers specifically to the vulnerable group(s), please insert reference number here
If the procedure is not covered by an existing generic protocol, please submit a full application to the Ethical Advisory Committee

Chaperoning Participants

If appropriate, e.g. studies which involve vulnerable participants, taking physical measures or inclusion of participants' privacy.

B7. Will participants be chaperoned by more than one investigator at all times? Yes No N/A If N/A, please provide details below

B8. Will at least one investigator of the same sex as the participant(s) be present throughout the investigation? Yes No N/A If N/A, please provide details below

B9. Will participants be visited at home? Yes No N/A If N/A, please provide details below

* Please submit a full application to the Ethical Advisory Committee.

If you have selected one of the answers above marked with an + please provide additional information on how you intend to manage the issues (please continue onto a separate sheet if required), then submit this checklist to the Secretary to the EAC:

Section C: Methodology/Procedures

To the best of your knowledge, please indicate whether the proposed study:

- C1. Involves taking bodily samples Yes No
C2. Involves procedures which are likely to cause physical, psychological, social or emotional distress to participants Yes No
C3. Is designed to be challenging physically or psychologically in any way (includes any study involving physical exercise) Yes No

If the procedure is covered by an existing generic protocol, please insert reference number here
If the procedure is not covered by an existing generic protocol, please submit a full application to the Ethical Advisory Committee

- C4. Exposes participants to risks or distress greater than those encountered in their normal lifestyle Yes No
C5. Involves collection of body secretions by invasive methods Yes No
C6. Prescribes intake of compounds additional to daily diet or other dietary manipulation/supplementation Yes No
C7. Involves testing new equipment Yes No
C8. Involves pharmaceutical drugs Yes No

(please refer to published guidelines)

C9. Involves use of radiation

Yes* No

(please refer to published guidelines). Investigators should contact the University's Health and Safety Office before commencing any research which exposes participants to ionising radiation - e.g. x-rays.

C10. Involves use of hazardous materials

Yes* No

(please refer to published guidelines)

C11. Assists/alters the process of conception in any way

Yes* No

C12. Involves methods of contraception

Yes* No

C13. Involves genetic engineering

Yes* No

* If you have answered 'Yes' to any of the above please submit a full application to the Ethical Advisory Committee

Section D: Observation/Recording

D1. Does the study involve observation and/or recording of participants?

Yes No If No, please go to Section E

If Yes,

D2. Will those being observed and/or recorded be informed that the observation and/or recording will take place?

Yes No

* Please submit a full application to the Ethical Advisory Committee

Section E: Consent and Deception

E1. Will participants give informed consent freely?

Yes If yes please complete the Informed Consent section below.
No* If no, please submit a full application to the Ethical Advisory Committee.

Note: where it is impractical to gain individual consent from every participant, it is acceptable to allow individual participants to "opt out" rather than "opt in".

Informed Consent

E2. Will participants be fully informed of the objectives of the investigation and all details disclosed (preferably at the start of the study but where this would interfere with the study at the end)?

Yes No*

E3. Will participants be fully informed of the use of the data collected (including where applicable, any intellectual property arising from the research)?

Yes No*

E4. For children under the age of 18 or participants who have impairment of understanding or communication:

- will consent be obtained (either in writing or by some other means)?

(Please refer to published guidelines)

G3. Will any video/audio recording of participants be kept in a secure place and not released for use by third parties?

Yes No*

G4. Will video/audio recordings be destroyed within six years of the completion of the investigation?

Yes No*

G5. Will full details regarding the storage and disposal of any human tissue samples be communicated to the participants?

Yes No*

* Please submit a full application to the Ethical Advisory Committee

Section H: Incentives

H1. Have incentives (other than those contractually agreed, salaries or basic expenses) been offered to the investigator to conduct the investigation?

Yes* No If Yes, Please provide details below

H2. Will incentives (other than basic expenses) be offered to potential participants as an inducement to participate in the investigation?

Yes* No If Yes, Please provide details below

If you have selected one of the answers above marked with an + please provide additional information on how you intend to manage the issues (please continue onto a separate sheet if required), then submit this checklist to the Secretary to the EAC:

Section I: Work Outside of the United Kingdom

G1. Is your research being conducted outside of the United Kingdom?

Yes No

If Yes, you may need additional insurance cover/clearance for your research.

If having completed this checklist, you will be making a full application to the EAC this issue will be checked for you as a part of the process. If however you do not need to complete a full application please contact Helen Patel (H.Patel@lboro.ac.uk)

Section J: Declarations

Checklist Application only:

If you have completed the checklist to the best of your knowledge without selecting an answer marked with an + or *, your investigation is deemed to conform with the ethical checkpoints and you do not need to seek formal approval from the University's Ethical Advisory Committee. Please sign the declaration below, and lodge the completed checklist with your Head of Department or his/her nominee.

Declaration
 I have read the University's Code of Practice on Investigations on Human Participants. I confirm that the above named investigation complies with published codes of conduct, ethical principles and guidelines of professional bodies associated with my research discipline.
Please sign below

Checklist with additional information to the Committee:
 If, upon completion of the checklist you have **ONLY** selected answers which require additional information to be submitted with this checklist (indicated by a +), please ensure that all the information is provided in detail and send this checklist to the Secretary to the EAC.

Full Application Needed:
 If on completion of the checklist you have selected one or more answers which require the submission of a full proposal please download the relevant form from the Committee's web page.

A copy of this checklist, signed by your Head of Department should accompany the full submission to the Ethical Advisory Committee.

Signature of Responsible Investigator *[Signature]*
 Signature of Student (if appropriate) *[Signature]*
 Signature of Head of Department or his/her nominee *[Signature]*
 Date

Advice to Participants following the investigation
 Investigators have a duty of care to participants. When planning research, investigators should consider what if any arrangements are needed to inform participants of those legally responsible to the participants of any health related (or other) problems previously unrecognized in the participant. This is particularly important if it is believed that by not doing so the participant will be put at risk. Investigators should consider what arrangements are needed to ensure that participants are fully informed of the risks of the research. This should include the risks of the research, the benefits of the research, the risks of not participating, the risks of not providing personal advice, but should not include the risks of personally. Investigators should familiarise themselves with the guidelines of professional bodies associated with their research.

Appendix M



Ksenija Kurzmina, Sustainable Design Research Group, Loughborough Design School, Bridgeman Centre, Loughborough University, Loughborough LE11 3TU, UK

Approaches towards Education for Sustainable Development Study

Informed Consent Form

(to be completed after Participant Information Sheet has been read)

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethical Advisory Committee.

I have read and understood the information sheet and this consent form.

I have had an opportunity to ask questions about my participation.

I understand that I am under no obligation to take part in the study.

I understand that I have the right to withdraw from this study at any stage for any reason, and that I will not be required to explain my reasons for withdrawing.

I understand that all the information I provide will be treated in strict confidence and will be kept anonymous and confidential to the researchers unless (under the statutory obligations of the agencies which the researchers are working with), it is judged that confidentiality will have to be breached for the safety of the participant or others.

I agree to participate in this study.

Your name

Your signature

Signature of investigator

Date

Appendix N

Case 1

Project Name	P1 New Eco Build	P2 Refurbishment of 1970's built	P 3 Photovoltaics	P 4 Greening Bowbridge Campaign	P 5 Playground	P 6 Save Energy Save Money campaign	P 7 Apple Trees	P 8 Extended Visits	P 9 Healthy Schools Initiative	P 10 School farm	P 11 School gardens	P 12 Eco-Club	P 13 Low Carbon Day	P 14 Earth Day
Description	Aim: To build a new education building with a vision of being carbon neutral as possible in design, construction and use and to be delivered within a defined budget.	Aim: to refurbish the old building in an energy efficient way	Aim: to become carbon neutral and to begin to generate energy	Aim: to educate parents about energy efficiency, to change behavior	Aim: to create a soft play area			Aim: to create experiences for pupils of different environments	Aim: to be a healthy school and to help others to see benefits of being healthy	Aim: to sustain a farm with the highest standards of welfare	Aim: to have a bountiful gardens		Aim: A day with a focus on low carbon emissions	Aim: A day to celebrate Earth
Partner (s)	City Council, Construction Contractor, Waste Management Group, University, Architect (A)	Construction Contractor	Community as shareholders		Design company, Architect (A)	Energy Agency	Donating organisation	Multiple organisations, such as farms, countryside, Food for life Partnership	Food for life Partnership, Schools in UK	Food for life Partnership	Food for life Partnership			
Issue (s)	energy efficiency, carbon neutrality, no waste, utilisation of other resources	energy efficiency	energy use/production	energy efficiency	recycling, healthy living, carbon neutrality	energy efficiency, saving money	healthy living	healthy living, sustainability issues	healthy living	value of care, healthy living	value of care, healthy living, biodiversity		energy efficiency	
Embedded	embedded into the grounds, embedded into the curriculum	embedded in grounds	embedded in grounds	embedded in community/ embedded in curriculum	embedded in grounds/ embedded in some curriculum	embedded in community/ some school grounds	grounds/ embedded in curriculum/ school operation	embedded in curriculum/PSHE	embedded in curriculum, grounds, community	embedded in grounds/curriculum	embedded in grounds		embedded across the school	embedded across the school
Participants	the whole school community, pupils, parents, staff, governors and Partners	Construction contractors, Head teacher	School grounds and community	parents, pupils, school	pupils, design company, school	School, parents	School, Deputy head, pupils (active learners),	pupils (Yr 3-6)	pupils, parents, other schools,	pupils, staff, parents	pupils (every year), staff, parents		pupils, staff	pupils, staff
Leader/Supporter	Head teacher, County Council driving integration of sustainability into design process	Head teacher, City Council	School/Community	school, pupils	School, Architect	School, Energy Agency	Deputy head	School,	School	TA, Gardener, pupils	Staff, Gardener, pupils			
Time	One-off	One-off	Planning Stage	Past	One-off	Ongoing	One-off	Ongoing	Ongoing	Ongoing	Ongoing	Past (was Ongoing)	Ongoing	Ongoing
Implications	Implication for the students in those years: introduction to eco build, sustainability in construction, critical thinking, experiential learning - across curriculum For the school: a building that embeds the sustainability ethos of the school, with low impact construction and use. For Partners: Development of partnerships built on the shared values of SD.	Although the school continuously refurbishes an old building, it has been able to incorporate the lessons on energy conservation from the Eco Build and re-use the material that has been left over from the Eco Build in the window panels.	community investment model where local community funds school to have photovoltaic panels to produce electricity by buying its shares. Community gets a return on their investment when surplus electricity is sold by the school to the national grid.	The school outreaches to parents to take small steps with their children to become more sustainable and 'works together with their families to complete and maintain these'. The campaign ran in several stages: surveys on energy use were undertaken at home by children (experiential learning), messages created by school (in the classrooms?) and sent out home to parents or through newsletter, parents brought into school to learn more about energy use through the work that pupils do in their curriculum, school assessed the impact on the behavior through surveys	a soft play area, made out of recycled ex-Nike training shoes. The pupils in that year participated in the design stage of choosing the colors and design online.	Campaign ran for the school as well as for the community. Energy Agency had demonstrations that school and parents participated in.	School will plant apple trees. TA and active learners considered where to plant them by including it in the curriculum and by pretending to be apple trees.	Children in older years are taken places to experience different environments, including farms, countryside, etc.	Pupils learn about benefits of being healthy and continuously experience it onsite. Parents are invited for cooking demonstrations, are sold local produce to, school creates healthy menus with the parents.	chickens and pigs with the highest standards of welfare	Each year has a garden plot that it looks after, There are sensory and wildflower gardens, supporting biodiversity and emotional well-being.		Celebration and keeping the profile of the issue high	Celebration and keeping the profile of the issue high
Further implications: creating loops	For council: An exemplar building in architectural design and sustainability for the Council For school: having a low environmental impact while using the space to educate. Continues to be used for educational purposes Well designed, inbuilt flexible learning space that is used in teaching. Building is a tangible artifact that showcases ethos of the school. For school project: Temporary roads laid out for lorries during construction was to be used as a base layer for netball courts. Knowledge on energy efficiency to be used in other projects.			For school: creating support and developing values in the community that will support the work of the school. For parents: gaining knowledge for life and changing behavior, developing relationship with their children. For students: experiential learning that will have a long impact, greater understanding of SD for community, energy efficiency as a whole	For school: a tangible implementation of school's ethos. For students: has a continuous impact on the students' well-being.	Knowledge and awareness from the campaign has potentially a long term effect on the school and community.	The Apple trees will have fruit every year, and therefore become a resource for school. School is in the process of deciding what to do with the harvest. For school and community a benefit of healthy eating and cheap organic produce. Either buying or being given away. If school sells apples, it will generate money to further sustain itself. Potentially a curriculum resource.		For teachers: a resource to use in the curriculum	For kitchen: fresh produce for the dinners for children: experiential SD learning, healthy food For parents: experience of organic produce at reasonable prices For school: money to further sustain the farm and the garden				
References:	New Building Information (2008), New Building Case Study (2010), (Head teacher, 1)	(Head teacher, 1)	(Head teacher, 1) (Online article, n.d.)	(Deputy head teacher, 1), (Head teacher, 1), (Staff Questionnaire, 1)	(Head teacher, 1) (Online article, n.d.) (Deputy head teacher, 1) (http://www.playtop.com/global/page.asp?node=1005&page=2&action=readmore&cid=81)	(Staff Questionnaire, 1) (Deputy head teacher, 1)	(Deputy head teacher, 1) (TA interview, 1)		(Deputy head teacher, 1) School Prospectus (2011 - 2012),	(Deputy head teacher, 1) (TA interview, 1) (Staff questionnaire, 1)	(Deputy head teacher, 1) (TA interview, 1) School Prospectus (2011 - 2012),			

Case 2

Project Name	P 1 Endangered Species	P 2 Congerstone Community and Renewable Energy Project	P 3 Wind Turbine Project	P 4 Instruments out of recycled materials	P 5 Gardening	P 6 Energy audit and Switch off campaign	P 7 Walking to School Week	P 8 Eco Week
Description	Aim: to create awareness in all children on endangered species	Aim: students' discovery about environment of Congerstone, energy use in local community and learning about renewable energy	Aim: To investigate the school itself and its own environment with regards to energy	Aim: To make instruments out of recycled materials in one workshop		Aim: to investigate the school's use of energy and changing school's behavior	Aim: to save energy, to promote healthy living, to walk to school	Aim: to promote SD to other schools through eco-activities at the school premises
Partner (s)	Local Zoo/Endangered Species Program	Leicestershire Rural Partnership (LRP); Parish Council, Local community	Business	Parent	Whole school	Parish Council	Parents, children	Other schools, local community and parents
Issue (s)	endangered species	community, environment, energy use	energy use, school grounds	recycling, reuse	gardening	energy use	energy use, healthy living	SD knowledge
Embedded	embedded into the curriculum	embedded into the curriculum	embedded into the curriculum	embedded into the club activity	embedded into the club activity	operation, school behavior	embedded into school operation	embedded into school extracurricular
Participants	all pupils participate at least once	pupils in that year	older pupils	pupils participating in the workshop and yearly concert	pupils in garden club	the whole school	pupils and parents	the whole school, other schools, local community, parents
Leader/Supporter	Staff	LRP and council were idea source, financial expert, and resource (kits) support. Parents and local community - provided information about their energy use and daily practices; Teachers	Business	Parent	Staff and parents	Parish Council source of ideas for projects and expertise	Staff	Deputy head, the whole school
Time	Ongoing	One-off	One-off	One-off	Ongoing	Ongoing	Ongoing	Ongoing
Implications	The Zoo provides an ongoing support for the school and a source of ideas to be embedded into the curriculum	wider community implications where changes proposed by the students to increase well being of local environment were shared and taken on board by the council. Project supported the learning process for all, promoting the issues, and keeping the profile of energy use in local community high. It also strengthened relation with the council by providing council with opportunity for securing more funding for such projects.	'Prototype projects' nevertheless have value as they allow schools to investigate their school, gain knowledge on subject, and to cross out impractical solutions.	Instruments are re-used in an annual Christmas charity concert		learning new behaviors, reflective	Encouraging a specific behavior	For the school such activity brings the attention to the SD values within the school and keeps it in a high profile for the school and others.
Further implications: creating loops				Money are sent to wider community in other countries or at home as social charity	produce of garden club is investigated in food technology club			

Case 3

Project Name	P 1 Woodlands	P 2 Playground	P 3 Farm	P 4 Beehives	P 5 Cooking Club Competitions	P 6 Visit Days	P 7 NCSL leadership projects	P 8 The Eco Hub	P 9 Eco Classroom	P 10 Polytunnel	P 11 Energy Saving Case Study	P 12 Gardens	P 13 Eco Build	P 14 Green flag	Energy Share	
Description	Aim: to protect a natural resource and to make it part of the school's grounds	Aim: to fund the playground	Aim: to take care of different animals	Aim: to maintain bees	Aim: entering competition that focus on growing and cooking your own produce. "Cook your own Omelette" and "Grow your own Sausage"	Aim: for the groups, schools, playgroups, etc. come to learn from the school or to use the resources, woods, the farm, etc.	Aim: to share sustainable knowledge and create impact and promote its values to wider community	Aim: to create a supportive network for sharing and collaborative learning for schools in the county on environmental issues	Aim: to have a space for eco club meeting and other work for school on sustainability. To have space for community to work in	Aim: to have a polytunnel	Aim: to test available resources to decrease energy consumption	Aim: to grow flowers, vegetables	Aim: to build new classrooms with the eco credentials	Aim: to get a green flag in the eco-schools program	Aim: a bid for solar energy	
Partner (s)	County Council officials, Wildlife Trust, Forestry commission, parents, apprentice	children, parents, staff	DEFRA, Veterinary drug rep, parent who is a Vet, children and their families, apprentice	bees	School Food Matters, School Farm Networks	Other groups	schools, WWF, London Institute and National College for School Leadership (NCSL)	30 primary schools/nurseries, NCSL	Building contractors	Local council, parents	Local council	Parents		the whole school		
Issue (s)	protect natural resource, utilise natural resource	funding, healthy living	care of animals,	environment, healthy living	growing and cooking the food, healthy living	utilise space, learn from good practice	creating partnerships, gaining practical knowledge	creating partnerships, sustainability issues	symbolic space	healthy living, environment	energy efficiency	healthy living		sustainable issues		
Embedded	school grounds/curriculum/.../community	school grounds	school grounds/curriculum/.../community	school grounds/extracurricular activity/club	community/school grounds	community	community	school grounds/curriculum/club/.../community	school grounds/.../curriculum/club/.../community	grounds/.../curriculum/club/.../community	grounds/.../curriculum/club/.../community	grounds/.../curriculum/club/.../community	grounds/.../curriculum/club/.../community		school grounds	
Participants	School, Wildlife trust, parents, pupils	pupils, parents	children and families	pupils/parents	pupils	School, other groups	Schools	Schools	children and other schools	school	pupils, staff	pupils, staff, parents		whole school		
Leader/Supporter	Head teacher/Wildlife trust/County hall	staff	HL TA	member of staff	teaching staff	HL TA with CEVAS	NCSL and WWF	School Case 3	School	School	Staff member	School		School		
Time	One-off/Ongoing	One-off	Ongoing	Ongoing	One-off	ongoing	One-off	Ongoing	Ongoing	Ongoing	One-off	Ongoing	Ongoing	Ongoing	Past	
Implications	School has undergone a learning process with support of organisations that helped it to get involved with the conservation agenda, providing information and developing skills with the headteacher to undertake maintenance program and to fund the project. Partners share common philosophy that it is important to protect and to take care of the woodlands	Students raised money for three years to support the development of the playground that they will not be using. The total was 45,000 pounds to build multi activity playground	The whole school is involved in taking care of the farm and experiential learning. Parents and staff support it by funding, parents and older children take care of the farm animals all year long on a weekly rota. One of the staff is responsible for purchasing food/straw/bell. Animal club is involved in operations that keep the farm tidy and healthy. Notions such as life/death are learned, pigs are fattened to become meat	Pollinating flowers of the school campus, honey is produced	Students enter competition to showcase their skills, growing, designing and cooking. These competitions keep the profile of the farm/cooking club high.	The schools/groups come to use the facilities to make their work more interesting and relevant. Scouts come to use woodlands when they do wood craft activities. Others come to learn from good practice.	A process of developing a resource that would help to support schools in starting on sustainable journey, a collaborative project	The school provides other school with a termly newsletter, training events, offer advice on specific issues and organises termly networking meetings	The school has a space dedicated to environmental work by the teachers and the curriculum, clubs and other community	Growing plants and trees to go into the school gardens, school dinners, and the woods.	The whole school was involved in testing energy monitoring/management behaviors/systems provided by the Local council. To identify potential uses/changes. Resulted in change in boiling setting, Getting quotes for LED lights, boiler load, etc. and pupil-friendly energy monitoring system.	To produce veg/fruit, to add to biodiversity				A funding scheme to support organisations to install solar panels
Further implications: creating loops	Ongoing use by the pupils through woodland club, building bird/hedgehog boxes, continuing to manage the woodlands. By the school in the curriculum. By other schools in utilising resource.	Money have been raised and a healthy outdoor facilities have been build	The farm extensively supports curriculum across numeracy, literacy, science and PSHE.	The pollination helps the cycle of plants, honey is used in school dinners, sold for funding further projects	Small reward that school could use towards its farm. Cooking Club also participates in School Fayres.	The good practice is implemented in other schools	Partnerships created resulting in an Ecohub	The schools in the hub take part in becoming more sustainable			Potentially embedded into the curriculum.	To be sold to the local community for funding				
References	Head teacher, 3; TA interview, 3	Head teacher, 3	Rabbit Case Study,3; Sheep Case Study, 3;Chickens Case Study,3; Goats Case Study,3; TA interview, 3; Staff questionnaire, 3	School film, 3;	TA interview, 3; Staff questionnaire, 3;	TA interview, 3; Staff Questionnaire, 3;	Staff questionnaire, 3; Head teacher, 3	School website, 3	School film, 3	School film, 3; TA interview, 3	Local council website, 3	Head teacher, 3; School film, 3; TA interview, 3		Head teacher, 3; School film, 3; TA interview, 3		

Case 4

Project Name	P 1 Change for life' dance project	P 2 Multicultural Saturday school	P 3 Re-vitalisation of the broad green area	P 4 Additional classroom	P 5 Playground	P 6 Gymnasium	P 7 Gardening	P 8 Light feasibility study	P 9 Solar energy for school	Eco club
Description	Aim: to promote healthy living in the community	Aim: to help foreign pupils learn English and to promote integration	Aim: pupils designed bollards to calm traffic and create safe play areas	Aim: to create an additional classroom	Aim: to create an additional sporting facility	Aim: to create an additional sporting facility		Aim: to consider energy efficiency when current light system will be replaced with the sensor light system	N/A	N/A
Partner (s)	Local community	Local authority, local community	artist in residence, local community	friend architect	N/A	friend architect	Whole school	Business, lighting company	N/A	N/A
Issue (s)	healthy living	English as additional language, learning other cultures	safety of the local play area	utilizing space, increased amount of students	utilizing space, healthy living, increased amount of students	utilizing space, healthy living, increased amount of students	gardening	energy use	N/A	N/A
Embedded	embedded into the extra curriculum	external to the school activity	embedded into the curriculum	school grounds	school grounds	school grounds	embedded into the curriculum	operation	operation	student club
Participants	pupils, parents, local community	teachers from local community, community	pupils, artist in residence	leadership team/architects /head teacher	pupils	pupils, community	pupils in all year groups	leadership team	N/A	N/A
Leader/Supporter		leadership team at the school, LA	teachers and artist in residence	Head teacher	Head teacher	Head teacher	Staff	Leadership team	N/A	N/A
Time	One-off	Ongoing	One-off	One-off	Planning Stage	Planning Stage	Past/Upcoming	Planning Stage	Upcoming	Upcoming
Implications		Saturday school brings children from schools across the town who speak English as their additional language. The aim is to improve their literacy and numeracy skills and encourage interaction between different cultures. It creates a sense of being in a community and reflects the multicultural nature of town." (School online article, 2009)	Pupils were involved with the local area. Safe play areas have been created adding to the safety of the local area.	more 'learning' space is created out of existing space	a multi use playground that can be used all year long	create an additional space for sporting activities	Encouraging exploration in the students	Entering a business partnership based on a 'green loan' and financial savings	N/A	N/A
Further implications: creating loops					Ongoing use by the pupils	community will be invited to use the facilities				

Case 5

Project Name	P 1 Waste Free Packed Lunch Box Competition	P 2 Big Tidy Up	P 3 Parent Mail	Recycling	P 4 No Paper Day	P 5 Shopping bags	P 6 Toilets	P 7 Hippo cistern project	Eco Warriors	P 8 Garden	P 9 Covered spaces to shelter	P 10 Day Trips	P 11 Eco Silver medal
Description	Aim: to decrease amount of waste from children's lunches	Aim: to clean area around the school	Aim: moving mail from being paper to being electronic	Aim: to recycle as much as possible in the school	Aim: to not use any paper during the day	Aim: selling shopping bags to the parents	Aim: to save water and energy by creating water/energy sensed toilets	Aim: investigate water usage	Aim: to give students opportunity to voice and work on eco issues	Aim: to grow their own food	Aim: to have a sheltered space for outdoor lessons and play time and area to congregate for parents while encouraging walking and to decrease congestion	Aim: Trips to local sustainable communities	Aim: to get accreditation for SD
Partner (s)	children, parents, staff, waste	children, parents, staff, litter, waste, care	school	school	school	School	children	school	school	Building contractors, Council	Green place, Eco House	the whole school	
Issue (s)	waste	litter, waste, care	waste, saving natural and financial resources	saving resources	saving resource	waste	saving resources, water and energy	water use	eco issues	healthy living, environment	well being, travel, energy use, congestion, social issue of labor	sustainable living	sustainable issues
Embedded	extracurricular/	school grounds	operation/community	operation	extracurricular/operation	community	school grounds/	school grounds/	club	school grounds/curriculum/ community	school grounds/curriculum	extracurricular/ opera	tion
Participants	Parents, children, teachers	children, parents, staff	school, parents	School, County Council, Groundworks	school	parents	children, staff	pupils	six children	children, community	children and other schools	pupils, staff	whole school
Leader/Supporter	School, Eco Schools, Council member	School	School	school	School	school	teaching staff	member of staff	School	School	Staff, members of community	School	
Time	One-off	One-off	Ongoing	Ongoing	One-off	Ongoing	Ongoing	One-off	Ongoing	ongoing	Ongoing	One-off	One-off
Implications	Children and parents as well as staff participate in bringing lunch that is free of waste. The implication of this competition is that individuals question their behavior with regards to waste. Parents are involved which means the impact is expanded to the community.	Students and parents picked litter outside to make their school area tidy. Parents and children participate in activity that shows care for their school environment.	School changed its operation from mailing newsletters to parents through mail to e-mail. In this way the school saves 'trees' and other resources and financially it is cheaper for the school, saving school money on printing.	The school recycles paper and ICT equipment	School tries not to use paper during the day	Parents purchase shopping bags to use for their shopping to reduce waste of plastic bags		School and student investigate use of Hippo product in their toilet cisterns to save the water	Students monitor usage of energy and water. Provide feedback to the school.	Children grow some food in the garden plot	A response to issues brought up by Ofsted. The resource has a construction process as well as its use. The construction recognises SD, and the process therefore looks at the use of resources, social and environmental. The use of resources considers both the children and the community. Outdoor learning/play area allows for personal well being and further development in children. Community is encouraged to walk more, and to reduce carbon footprint, and congestion in the local area.		
Further implications: creating loops							The premises are used in the curriculum to measure the use of water and energy			The garden is used in curriculum sometimes to learn about growing. Vegetables grown are sold and money is donated to charity			
References	county council website, 5	county council website, 5	Head teacher, 5	Head teacher, 5; Staff questionnaire, 5	Staff questionnaire, 5	November Newsletter, 5	Head teacher, 5, Staff questionnaire, 5	Head teacher, 5	Head teacher, 5	Head teacher, 5	School document, 5	Staff Questionnaire, 5	Head teacher, 5; Staff questionnaire, 5