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The potential of school partnerships to ameliorate educational inequity:
A case study of two partnerships in Scotland

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Abstract

The disparity between the educational achievement of children from disadvantaged backgrounds compared to children from more advantaged backgrounds in Scotland has led to a number of proposed changes to education. Many of the initiatives to address the disparity have involved multi-agency collaborations such as The Child Poverty Strategy for Scotland and GIRFEC. The only approach in Scotland to specifically involve educational professionals participating in collaborative inquiry across school and local authority boundaries, the School Improvement Partnership Programme (SIPP), is the focus of this study. Drawing on the capability approach and social network theory this study examines the use of school collaboration to ameliorate educational inequity. Educational professionals and pupils from a school partnership programme were invited to participate in this case study. 114 social network analysis questionnaire responses were received over two time points. 25 pupils participated in focus groups and 18 educational professionals participated in either focus groups or interviews. Many of the participating educational professionals took risks by introducing innovative strategies in classrooms, schools and local authorities. Support was provided in the form of resources such as supply teachers to allow classroom teachers to participate in collaborative inquiry. This thesis extends our understanding of the opportunities for capabilities to be fostered in pupils and educational professionals when educational professionals are united in purpose, but have the freedom and support to move between a variety of networks. Knowledge about the degree to which such networks were able to interrupt existing social norms, rules, power structures and pedagogy has implications for planning the appropriate conditions to support long term, dynamic partnerships for the amelioration of educational inequity.

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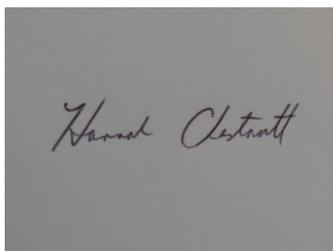
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Author's declaration

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

Signature:

A rectangular box containing a handwritten signature in cursive script that reads "Hannah Chestnutt".

Printed name: Hannah Chestnutt

Abbreviations

ADES	Association of Directors of Education in Scotland
AHDS	Association of Headteachers and Deputes in Scotland
CEM	Centre for Evaluation and Monitoring (pupil assessments)
CGI	Cognitively Guided Instruction
CLDW	Community Learning Development Worker
CoSLA	Convention of Scottish Local Authorities
CPD	Continuing Professional Development
DfE	Department for Education
EIS	Educational Institute of Scotland
ES	Education Scotland
GIRFEC	Getting It Right For Every Child
GTCS	General Teaching Council Scotland
IQEA	Improving the Quality of Education for All
LA	Local Authority
MAL	Myself as a Learner
NARA	Neale Analysis of Reading Ability
NASUWT	National Association of Schoolmasters/Union of Women Teachers
NCSL	National College for School Leadership
NPFS	National Parent Forum of Scotland
OECD	Organisation for Economic Co-operation and Development
PISA	Programme for International Student Assessment
QAP	Quadratic Assignment Procedure
QIO	Quality Improvement Officer
RAFA	Raising Attainment for All
SfLA	Support for Learning Assistant
SIMD	Scottish Index of Multiple Deprivation
SIPP	School Improvement Partnership Programme
SLS	School Leaders Scotland
SNA	Social Network Analysis
SPSS	Statistical Package for the Social Sciences
SQA	Scottish Qualifications Authority
SSLN	Scottish Survey of Literacy and Numeracy
SSTA	Scottish Secondary Teachers' Association
UCINET	University of California Irvine Net (SNA software package)

Chapter One: Introduction

Educational professionals¹ and pupils participate in learning and teaching in complex social contexts where fostering good relationships is of paramount importance (Daly 2010; den Brok, Brekelmans and Wubbels 2004; Liou et al. 2015; Ramsey et al. 2016; Rudasill et al. 2010). As educational professionals guide their pupils to develop positive relationships with one another they also work to develop their own relationships with pupils, carers, colleagues and community members. The development of these relationships has an impact on the types of support available to educational professionals as they seek to provide the most equitable opportunities for their pupils.

Teachers seeking opportunities to promote educational equity require communities of support. An emphasis on the provision of relational support for educators aspiring to foster fair and equitable educational communities is not a new idea. In 1916 educator L. Judson Hanifan published his work outlining the role of social capital to improve community living conditions (Putnam 2002). As an educator, Hanifan did not focus solely on what took place in classrooms, but emphasised the need for entire communities to increase social capital. For almost a century afterwards little evidence was produced to promote collaborative communities of educational professionals for the purpose of tackling inequities. It is only recently that an emerging evidence base (Ainscow et al. 2012b; Ainscow et al. 2016; Daly and Finnigan 2011; Finnigan, Daly and Liou 2016) has suggested the value of collaborative working as a way of developing equity focused improvement strategies. This research base demonstrates the importance of valuing both teacher knowledge acquired in classrooms and teacher relationships developed through collaborative experiences of analyzing their circumstances, determining a research focus, and collecting evidence about their practice (Ainscow et al. 2012b; Ainscow 2016; Ainscow et al. 2016; Cochran-Smith and Lytle 2009; Daly and Finnigan 2011; Earl and Katz 2006; Finnigan, Daly and Liou 2016; Hiebert, Gallimore and Stigler 2002; Moolenaar, Slegers and Daly 2011). The role played by teachers in leading change within educational communities is explained by Chapman et al.:

...teacher leadership tends to be exercised by teachers who want to remain in classrooms, working with students, but are minded to play a role in leading change by working with colleagues to support the professional learning of others and creating professional learning communities (2017: 3).

¹ In this thesis the term educational professionals includes teachers, headteachers and local authority officers.

Supporting teachers to remain in classrooms while participating in collaborative inquiry enables the design of effective and context-specific improvement strategies (Ainscow et al. 2016). Trusting relationships within networks of educational professionals provide the environment for risk taking and innovative initiatives (Moolenaar, Slegers and Daly 2011). Equally important are trusting relationships with critical friends in other schools, local authorities, policy arenas, communities or institutions. These relationships, which are brokered between networks, can challenge existing practices, assumptions, beliefs and standards and introduce new and innovative knowledge.

To investigate the relationships that define these collaborative partnerships an appropriate methodological approach is required; such an approach can combine a study of the attributes of educational professionals along with the dynamic relations and interactions between them. A social network analysis (SNA) approach has the potential to provide clarity regarding the flow of resources and ideas among and between organisations and individuals. To maintain a focus on relationships that matter most, to collect and share data in a way that encourages the fostering of these relationships, and to illuminate the perspective of practitioners and pupils requires a mixed methods approach. Focus groups, interviews, questionnaires and SNA were all chosen as part of the combined methods for this study.

Purpose of the study

The purpose of this study is to investigate the relationship between opportunities to ameliorate educational inequity and networks of educational professionals involved in school partnerships. It extends our understanding of the use of collaboration between educational professionals for increasing achievement in disadvantaged areas by generating knowledge of professional learning, practice, and research. This study examines the relationship between structures of partnerships and the generation and transfer of knowledge and approaches which are applicable to the tackling of educational inequity in specific contexts.

Research questions:

1. To what extent did the School Improvement Partnership Programme facilitate educational professionals' development of collective values and construction of new approaches to support the amelioration of educational inequity? What blockages to the changes were present?
2. How did the social network structures of the partnerships involved in the School Improvement Partnership Programme influence educational professionals' generation or sharing of: (a) new knowledge and understanding and (b) existing knowledge?

3. What factors contributed to the impact of the School Improvement Partnership Programme on pupil achievement?

This thesis begins with a brief explanation of the context in which the research took place. The initiative and the principles which guided its design are described in the second chapter. The third chapter explains the choice of the capability approach as a lens through which to identify opportunities for educational professionals to provide pupils with increased freedom and access to capabilities. The capability approach offers a means of identifying and evaluating equitable practices by considering not only the initial opportunities or the future outcomes, but also the intermediate processes required for an individual's flourishing. The fourth chapter identifies a gap in the literature regarding the characteristics and network structures of partnerships able to provide opportunities for increased equity in classrooms. Support for educational professionals seeking to pursue more equitable changes can be provided by communities engaged in collaborative partnerships. To compare, evaluate and measure the benefits and constraints of the structures of the school partnerships, social capital theory and social network theory were utilised. The fifth chapter, the methodology chapter, provides a rationale for the choice of a mixed methods approach using social network analysis. It also introduces the measures of betweenness, density, E-I index and in-degree which were used to compare the structures of the networks and positions of individual actors. The two findings chapters address the research questions by outlining the factors that enabled changes to social norms and relations. These factors included the experiences of pupils and educational professionals which interrupted existing social norms, rules, power structures and pedagogy. By working collaboratively within a system that provided support at the classroom, school, local authority and national levels both pupils and educational professionals experienced a degree of increased autonomy and freedom. The discussion chapter compares the findings to the existing literature and suggests reasons for discrepancies. The concluding chapter proposes a new typology of school partnerships. It also suggests implications of the findings for policy, practice and theory.

Chapter Two: The School Improvement Partnership Programme (SIPP)

The School Improvement Partnership Programme (SIPP) was launched in 2013 as a response to low attainment in disadvantaged areas of Scotland in both primary schools and high schools. A persistent and worrying gap between the achievement results of pupils in more disadvantaged situations in Scotland led to the launch of the SIPP. The 2013 Scottish Survey of Literacy and Numeracy (SSLN) results for P4 pupils and then P7 and S2 pupils demonstrate an attainment gap between Scottish Index of Multiple Deprivation (SIMD) categories which grows wider as pupils progress through the school years (Sosu and Ellis 2014).

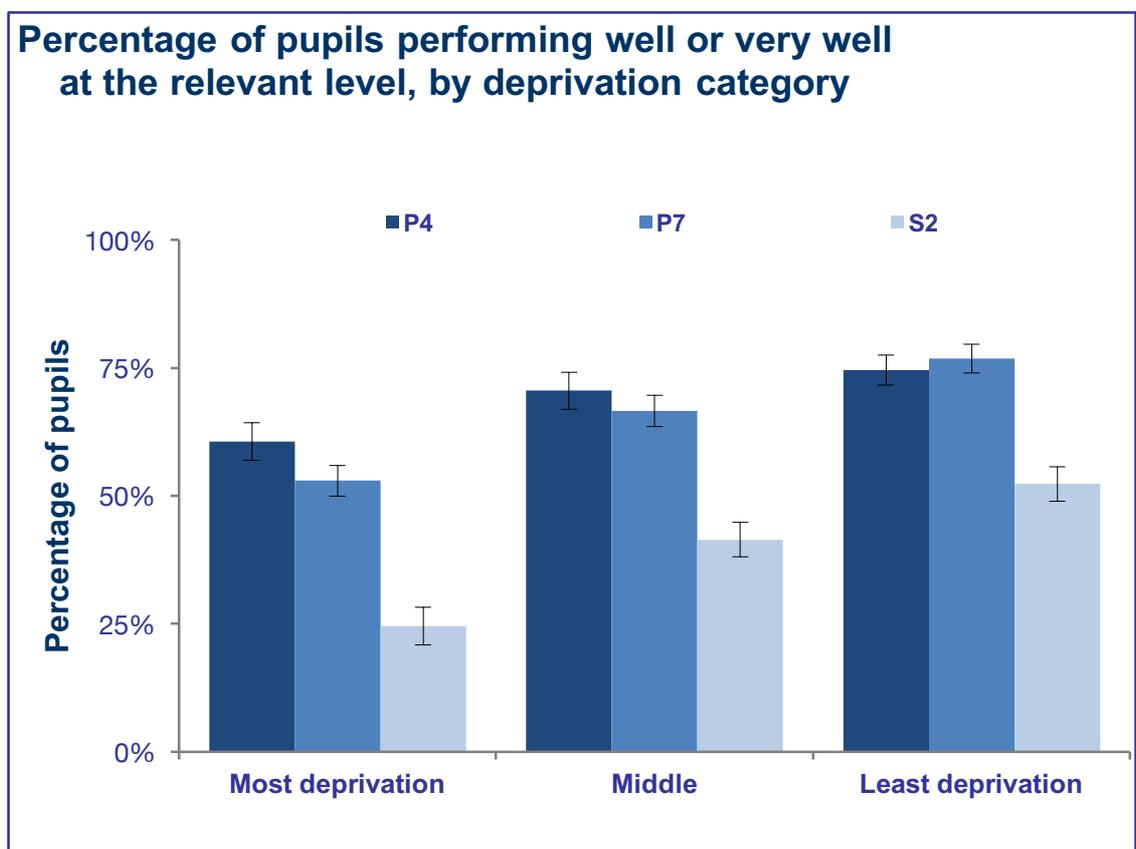


Figure 1: Attainment gap by deprivation category
(<http://www.scotland.gov.uk/Publications/2014/04/5692/downloads>)

Attainment in this sense is being used to describe test scores on the SSLN. These deprivation categories of ‘most deprivation’, ‘middle’, and ‘least deprivation’ have been defined by the Scottish Index of Multiple Deprivation that is based on data from each pupil’s home postcode. Deprivation is defined by the SIMD “as the range of problems that arise due to lack of resources or opportunities covering health, safety, education, employment, housing and access to services, as well as financial aspects” (Scottish Government 2012). Just prior to the time of the SSLN survey it was reported that 27% of

UK children were living in poverty (Smith 2014) and for the first time more than half of the 13 million people in the UK living in poverty were in a working family (Joseph Rowntree Foundation 2013). The gap between rich and poor was reported to be at its highest level in 30 years in most OECD countries (Smith 2014). The number of teachers in Scotland had fallen by around 4000 since 2007 to just over 51,000 in 2013 (Smith 2014). In the context of this time of austerity following the 2008 economic crisis, the Scottish Cabinet Secretary for Education and Lifelong learning announced in March 2013 that the link between low educational attainment and socio-economic deprivation needed to be tackled using new strategies (Russell 2013). To tackle this attainment gap funding was provided for a range of initiatives including £1 million to support the initial implementation of the School Improvement Partnership Programme (SIPP). The programme was developed with the support of Education Scotland (ES), the Association of Directors of Education in Scotland (ADES), the Convention of Scottish Local Authorities (CoSLA), the Association of Headteachers and Deputies in Scotland (AHDS), School Leaders Scotland (SLS), Educational Institute of Scotland (EIS) and the Scottish Government. Each partnership in the SIPP involved a group of pupils, school staff, local authority staff, and university researchers. Each school also existed within a number of other networks such as independent networks (AHES, NPFS, SLS, GTC); unions (AHDS, EIS, SSTA, NASUWT); the Scottish Government (Education Scotland, SQA); local councils (and CoSLA); and the British Council.

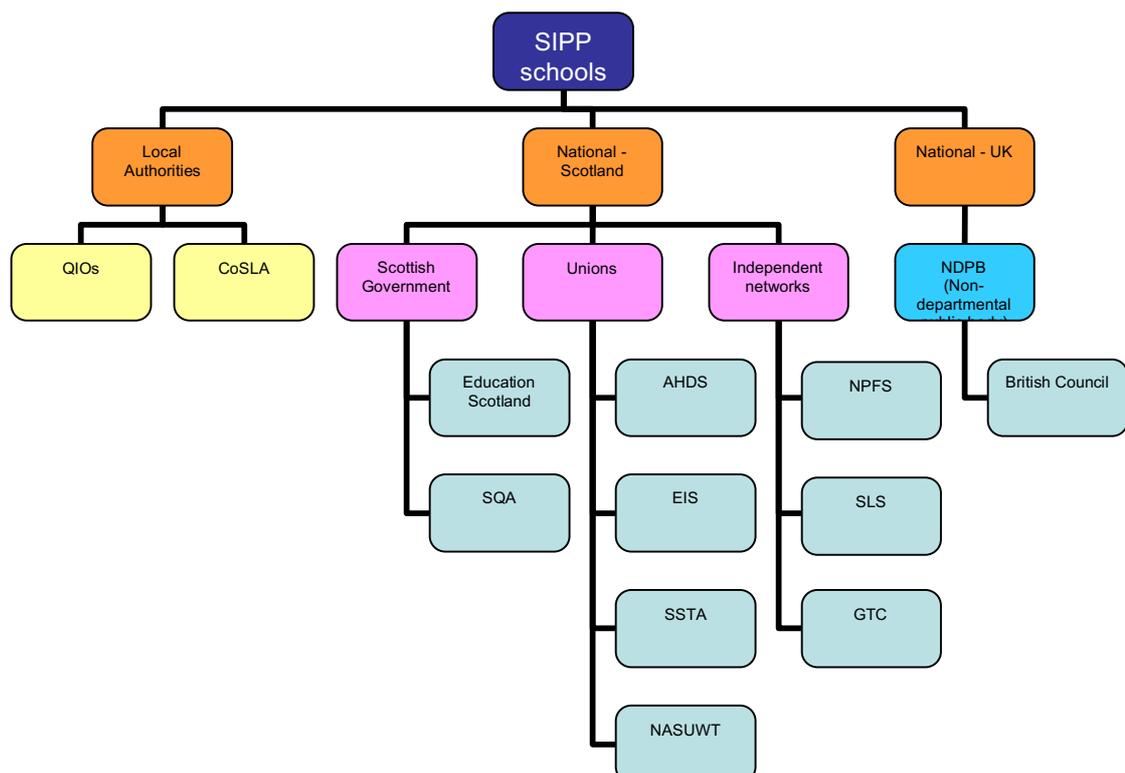


Figure 2: SIPP schools as networks nested within other networks

The SIPP was designed and implemented by Education Scotland and the Robert Owen Centre for Educational Change. By drawing on international educational research and practice that demonstrates the benefits of locally owned, teacher-led, long-term, nationally co-ordinated collaboration, key principles were established for interested schools and local authorities to provide a flexible, but coherent framework (Chapman et al. 2014).

Interested local authorities prepared proposals outlining their plans. These proposals were assessed by Education Scotland and other key stakeholders before funding was granted.

14 local authorities were awarded funding. With the exception of one local authority, all of the others worked in partnership with one or more other local authorities. A total of eight partnerships, with the support of Education Scotland, University of Glasgow researchers and local multi-agency teams, embarked upon a process of collaborative inquiry beginning with an assessment of the needs of targeted pupils, followed by the development of data-informed procedures and an evaluation of the impact (Chapman et al. 2015). Each of the eight SIPP projects were unique, but also shared some similarities.

Of the eight partnerships in the SIPP two of them were researched in depth for this thesis.

In the table below these are identified as partnerships A and B.

	Partnership A	Partnership B	Partnership C	Partnership D	Partnership E	Partnership F	Partnership G	Partnership H
Number of local authorities	1	2	3	2	2	2	1	1
Number of schools	2	13	3	>30	2	12	1	9
School phase	Primary	Primary	Secondary	Primary & Secondary	Secondary	Secondary	Secondary	Primary & Secondary
Evidenced impact	Maths	Maths and reading	Parental-engagement, pupil attendance	----	Parental engagement	Use of data, pupil motivation	Pupil mental well-being, attendance, motivation	Literacy

Table 1: Comparison of all eight SIPP partnerships

Every SIPP project had the overarching aim of tackling disadvantage in Scottish education. They also shared a common approach to this aim: participation in collaborative inquiry or collaborative action research. The main collaborative partners were usually teachers, except in the case of one partnership where Community Learning Development Workers (CLDW) and Support for Learning Assistants (SfLA) were heavily involved. The differences between projects were apparent when looking at the sizes of the partnerships, school phase, interventions and impact. Sizes of the partnerships ranged from just 2 schools in a single authority to up to 3 local authorities and over 30 schools. School phases varied between primary, secondary, or both. The chosen interventions varied in scope and focus resulting in a large range of evidence of impact. The impact of the SIPP partnerships was measured using data collected by educational professionals involved at each school and shared with the research team at the Robert Owen Centre. Researchers at the Robert Owen Centre also collected additional evidence of impact. The combined sources of evidence were used to produce the SIPP reports (Chapman et al. 2014; Chapman et al. 2015; Chapman et al. 2016). The educational professionals who collected evidence of impact used data collection tools such as: CEM (Centre for Evaluation and Monitoring) assessments in reading and maths; Neale Analysis of Reading Ability (NARA); bespoke assessments for Cognitively Guided Instruction (CGI); *Myself as a Learner* (MAL) assessments of self-perception attitude to learning; pupil work samples, pupil presentations and profiles; pupil and parent focus groups; pupil, parent and teacher surveys; Scottish Qualifications Authority (SQA) examination results; attendance data; staff learning evaluations, profiles and reflective journals, etc. Additional evidence of impact collected by the Robert Owen Centre included social network analysis data, surveys, observations, pupil focus group data, educational professional interview and focus group data. The evidence from the eight SIPP partnerships using these combined sources of data revealed increased achievement in mathematics and reading, improved attendance, pupil mental well-being and motivation, positive impact on parental engagement, and increased continuing professional development (CPD) opportunities for teachers (Chapman et al. 2015).

The Cluain and Abhainn Partnerships

Two of the SIPP partnerships were the focus of this study involving three Scottish local authorities and 15 schools. One of the partnerships, Cluain (a pseudonym) involved one local authority and two schools. The other partnership, Abhainn (a pseudonym) involved

two local authorities and 13 schools. All of the local authorities involved in this study were located in the Central Lowlands of Scotland. This relatively low-lying area is the most densely populated area of Scotland where over half of Scotland's population resides. Each of the three local authorities in this study is comprised of a mix of rural settlements, urban conurbations, commuter towns, villages and suburbs. The proportions of the population from a minority ethnic community range from 0.7% in the least diverse of the three local authorities to 3.8% in the most diverse of the three local authorities (Glasgow Centre for Population Health 2008).

Researcher participation

As a research associate of the Robert Owen Centre my involvement in SIPP began just a couple of months after the programme was launched. Initially my participation in SIPP included accompanying senior researchers from the Robert Owen Centre to visit SIPP schools that had requested support as they determined the focus of their collaborative inquiry. I also attended each of the meetings at the Education Scotland offices to plan SIPP national events and to plan the writing of the evaluation reports. At SIPP national events I participated as a researcher recording observations, meeting with educational professionals, facilitating group discussions and presenting workshops on Lesson Study. Throughout the data gathering and writing of the SIPP evaluation reports I assisted with: focus groups, interviews, transcribing, social network analysis instrument design, social network analysis data collection and analysis, qualitative data analysis, report writing and editing. Over time my role as a researcher blurred with my role as a participant while I co-constructed accounts of the experience with educational professionals. I developed relationships with participants in the project and I had an interest in the success of their work. My work with practitioners, policy-makers and researchers also included preparing presentations and documentation to disseminate the research findings. As part of this larger community I gave presentations at invited talks and international conferences. I also contributed to the writing of five publications arising from this research (see Appendix A).

Participants

The partnership that spanned a smaller geographic area and only one local authority, the Cluain partnership, included the largest group of participants. This partnership involved 43 educational professionals in the first time point and an additional 11 in the second time point. By contrast, the partnership that spanned a larger geographic area including two

local authorities involved only 33 educational professionals. A selection of these SIPP participants was involved in the research as shown in Table 2.

Partnership	Composition
Cluain	1 local authority 2 primary schools 43 educational professionals participated in the partnership (1 st time point) 40 educational professionals participated in the research (1 st time point) 11 new educational professionals participated in research (2 nd time point) A total of 12 pupils participated in the research A total of 51 educational professionals participated in the research
Abhainn	2 local authorities 13 primary schools 33 educational professionals participated in the partnership A total of 13 pupils participated in the research A total of 27 educational professionals participated in the research
TOTAL	3 local authorities 15 primary schools 25 pupils participated in the research 78 educational professionals participated in the research

Table 2: Partnerships and their composition

Of the 78 educational professionals who participated in the research, 18 participated in interviews or focus groups. Using the transcripts from these interviews and focus groups the quotations in chapters six and seven represent 16 of the educational professionals. These 16 individuals, in addition to one teacher who is also mentioned in the findings but not quoted, are assigned pseudonyms according to Table 3. The names are listed in their order of appearance in the text. Pseudonyms were not assigned to the remaining 61 educational professionals, but rather numbers are used instead to identify educational professionals who appear in the social network analysis. Pupils who are quoted are not named, but their partnership affiliation is mentioned.

Pseudonym	Socio-gram number	Partnership	Position	Teaching experience
Una	6	Abhainn	headteacher	> 16 years
Claire	13	Abhainn	headteacher	> 16 years
Beitris	21	Abhainn	headteacher	> 16 years
Gillian	9	Abhainn	teacher	< 16 years
Caitlin	18	Abhainn	teacher	< 16 years
Alasdair	12	Cluain	teacher	< 16 years
Dorcas	2	Abhainn	local authority officer	< 16 years
Magaidh	7	Abhainn	headteacher	> 16 years
Isla	10	Abhainn	teacher	< 16 years
Morvyth	27	Cluain	headteacher	> 16 years
Deirdre	2	Cluain	headteacher	> 16 years
Mhairi	26	Cluain	teacher	< 16 years
Morag	11	Abhainn	teacher	< 16 years
Moire	17	Abhainn	teacher	< 16 years
Calum	22	Abhainn	local authority officer	> 16 years
Agnes	20	Cluain	teacher	< 16 years
Caitriona	12	Abhainn	teacher	< 16 years

Table 3: Pseudonyms of quoted educational professionals

Despite differences in the experiences of the educational professionals and differences in the impact of each of the partnerships, all of the partnerships began with the collective aim of ameliorating educational inequity. The gathered evidence of the impact of SIPP, however, does not demonstrate an amelioration of educational inequity. The collected data from the SIPP provides evidence that educational professionals received support through their partnership involvement to embark on new pedagogical approaches. This thesis seeks to use the capability approach to explore the potential for the new pedagogical approaches to ameliorate educational inequity. This is done by exploring evidence that participants gained access to increased capabilities as a result of the changes that occurred in classrooms and schools.

Chapter Three: Educational inequity

Gaps in attainment, achievement, outcomes, or capabilities between different groups of learners can be described using various terms such as deprivation, disadvantage, inequity, or inequality. These terms cannot be used synonymously since each term has a different meaning. This chapter will establish definitions before explaining the choice of the term inequity to use throughout the remaining chapters. Similarly, definitions of the locus of the inequity such as attainment, achievement, outcomes or capabilities will be established before choosing capabilities as an area of focus. The remainder of this chapter will outline the capability approach as an appropriate theoretical lens through which to view educational inequity.

Defining deprivation, disadvantage, inequality and inequity

In Scotland levels of deprivation are often defined and compared using the Scottish Index of Multiple Deprivation (SIMD). Deprivation according to the SIMD is defined “as the range of problems that arise due to lack of resources or opportunities covering health, safety, education, employment, housing and access to services, as well as financial aspects” (Scottish Government 2012).

On the other hand, disadvantage (Wolff and de-Shalit 2007) describes the failure to identify and improve the position of those who are least advantaged, not just economically, but also relationally. The specific categories of disadvantage as defined by Wolff and de-Shalit differ from the categories used for the SIMD. Categories of disadvantage include the capabilities that each individual should have the freedom to do and be (Nussbaum 2011; Wolff and de-Shalit 2007). Addressing disadvantage according to this meaning requires unequal treatment in favour of the disadvantaged through provision of access to central capabilities (Sen 1992; Wolff and de-Shalit 2007). Positive action in this sense can be argued to create further inequalities (Platt 2011), but can also be argued to be the most pragmatic approach (Miliband 2005; Wolff and de-Shalit 2007).

The concept of disadvantage suggests the need for positive action for the worst off. On the other hand, the amelioration of inequality suggests the need to provide an equal distribution rather than an unequal distribution of resources, opportunities, and outcomes. To tackle inequality suggests the provision of equal measures for all. Using this definition there are different possible interpretations of who is included in ‘all’ and “in what ways it

is important that people have the same” (Arnesson quoted by Herrera 2007: 323).

Wilkinson and Pickett (2009) choose to compare life expectancy, health issues, education, teenage birth rate, homicides, imprisonment, trust, and social mobility to illustrate aspects of equality. They envision a society where every individual has enough wealth for their needs to be met, but not so much that a gap between rich and poor is created. They argue that increasing the wealth of an individual is only beneficial to a certain point and after that point it is of no further benefit to them. In fact, as some members of society gain more wealth it becomes detrimental to them and to every other member of society. The resulting imbalance in wealth produces higher crime rates, a lower standard of living, political instability and lower life expectancy for all members of society regardless of economic position. Wilkinson and Pickett (2009) emphasise the impact of inequality on all members of a community implying issues of fairness.

Issues surrounding where and when equality should begin and end also emerge from the work of Bourdieu and Passeron (1964). Bourdieu and Passeron (1964) relate equality to the capital held by an individual and the usefulness of that capital in a particular field or game. Education can be considered a field or a game in which particular skills and knowledge lead to greater capital than others and some people have greater access to the types of capital available. Inequalities in the varying potential that an individual brings into a field are a result of differences in *habitus*.

Habitus is “...a set of historical relations ‘deposited’ within individual bodies in the form of mental and corporeal schemata of perception, appreciation and action” (Bourdieu and Wacquant 1992: 16). It is a system of actions and thoughts which is not currently or quickly formed, but rather historical. *Habitus* is part of an individual before they can remember acquiring such perceptions and thoughts. It is part of both the unconsciousness and consciousness of children before starting school. It is deposited, rather than acquired or initiated through an individual’s autonomous effort. Economic conditions, class or other environmental structures effect one’s *habitus* (Bourdieu and Wacquant 1992). Human action, however, is not solely determined by *habitus*, but the relationship between the objective world and one’s *habitus* (Grenfell and James 1998).

Bourdieu and Passeron explain how circumstances and histories create unequal starting points due to an individual’s *habitus* and access to capital (1964). These ideas of equality become complicated by questions such as what should be distributed equally? To whom?

And how is it judged to be fair? Additionally, defining equal distribution is impossible without a starting point from which to begin measuring equal access to resources, opportunities and outcomes. Does equality in education begin by providing equal opportunities when a child begins school? Perhaps it begins at pre-school, or at birth, or by providing for the health needs of the mother before the child's birth, or by providing for the educational and economic needs of the child's parents before the child's birth? As stated by Platt, "Opportunities are conditioned by circumstances and histories, and finding a starting point from which to consider opportunities as equal can lead to a vanishing point" (2011: 7). The past, present and future needs of children in a classroom can only be addressed through unequal, but fair provisions.

The notion of inequity or a lack of fairness is sometimes used interchangeably with inequality, yet these two words have different meanings. While inequality is about what can be measured to be unequal, inequity is about a lack of fairness. Inequity can suggest a lack of recognition of the diverse needs of each individual and the groups to which they belong. Redistribution of economic resources and opportunities has a role to play, but what else is needed? Combining economic redistribution with recognition of cultural and individual differences has been recommended from the perspective of social justice theories applied to a variety of contexts including education (Fraser 1996; Raffo 2011; Sen 1992). Equitable education demands the fair acquisition of cultural and social capital by recognising different ways of knowing and being. Equity is inclusive of concepts such as positive action, capabilities, and an individual's freedom to choose. Arising from equity and the concept of fairness are the following questions: What is fair education? How might it be achieved? Is it achievable? Or even desirable? Answers to these questions are dependent upon our beliefs about human motivation, child development, genetic inheritance, and social constructions.

Are our pupils the products of deterministic structures, or products of their own individual agency? If both structures and agency play a part, then fairness must include recognition of the diverse needs of each individual and the groups to which they belong. Equity requires the fair acquisition of cultural and social capital by recognising different ways of knowing and being. Addressing the causes of inequity involves both redistribution and recognition. The need for recognition of identities and cultural products of groups is named by Fraser (1996) as the politics of recognition. Raffo applies this concept to education.

In terms of education, the politics of recognition illuminates the many cultural injustices associated with aspects of poverty, class, gender, ethnicity and disability that different groups of young people and their families experience through the education system. It suggests that educational injustices occur because of the way these groups of young people and their families have their identities, funds of knowledge, and educational desires silenced by dominant educational discourses or paradigms (2011: 335-336).

Equitable education demands much more than redistribution of economic capital. It also requires the fair acquisition of cultural and social capital by recognising different ways of knowing and being.

Political terminology

Choosing appropriate terminology to use such as inequality, inequity, disadvantage, or deprivation, must also consider political uses of these words. The involvement of political theory in the development of definitions of disadvantage, equity, and equality is evident in discussions of new egalitarianism, resource egalitarianism, opportunity egalitarianism, and the Third Way. For example, by arguing for a pluralist notion of equity Cogneau (2005) is able to include both right and left-wing criticisms of the idea of equality of opportunity. He suggests that in addition to the principle of equality of opportunity, notions of equity should also include meritocratic principles and equalization of outcomes. Lynch and Lodge provide a reason for avoiding a political stance, "...to speak in terms of equality in education was to ally oneself too closely with the ethical assumptions of political theory, and too far away from the "objective", analytical discourse of the social sciences" (Lynch and Lodge quoted by Herrera 2007: 321). Such motivations must be considered when choosing which terms to use: inequality, inequity, disadvantage, or deprivation. Before outlining the choice for this study a summary of these terms is provided in Table 4.

	Inequity	Inequality	Disadvantage	Deprivation
Key ideas	Unfair distribution (of resources, opportunities and outcomes); misrecognition of ways of being	Unequal distribution (of resources, opportunities, outcomes)	Failure to identify and improve the position of those who are least advantaged (both materially and relationally)	Defined by the SIMD “as the range of problems that arise due to lack of resources or opportunities, covering health, safety, education, employment, housing and access to services, as well as financial aspects” (Scottish Government 2012).
Empirical questions	How does recognition of the identities and differences of pupils promote more equitable education? “How do equity judgements... about equity criteria, change over time and space?” (Hutmacher et al. 2011: 19)	Can educational resources and opportunities be equally distributed?	Can education, which favours the needs of some pupils over others, achieve equitable outcomes for all pupils?	How much influence do schools have over the perpetuation of deprivation?

Table 4: Inequity, inequality, disadvantage and deprivation

For the purposes of my own research, I have chosen to use inequity to describe the disparity among pupils' educational experience because the concept of inequity, unlike inequality can include both fair and equal distribution, as well as recognition. Inequity is also inclusive of the concept of positive action, but it is not as closely aligned politically as the term disadvantage. Finally, inequity goes beyond deprivation to include capabilities and an individual's freedom to choose. The choice of the term inequity rather than inequality leads to a wider range of proposed responses.

A disadvantage of the choice of the term inequity, however, is the difficulty of operationalising the concept of inequity, but before operationalisation is considered the locus of the educational inequity is discussed. Educational inequity can be found within gaps in achievement, attainment, opportunities, participation, outcomes, or capabilities. Each of these words describe a different locus of educational inequity, but one of the most commonly chosen terms, especially in Scotland at the moment, is attainment.

Defining attainment, achievement, capabilities and outcomes

A comparison of attainment results as indicated in Figure 1 reveals a visible gap between pupils in the most and least deprived categories and this gap appears to be growing over time as young people progress through school. This, however, must be considered alongside international data from other countries such as England, Northern Ireland and Sweden. In England, research revealed that:

...although educational failure is concentrated in poor urban contexts, there is a nuanced difference between the sociocultural makeup of different contexts, with some equally poor urban neighbourhoods demonstrating differentially better or worse outcomes (Raffo 2011).

Similarly, in Northern Ireland, the research of Burns et al. (2015) revealed nuanced differences in the achievement levels of some schools when comparisons were made based on a school's multiple deprivation index. Further evidence from Sweden suggests why this type of attainment data should be accompanied by additional observations and data. In Sweden PISA scores were interpreted in isolation from broader issues, similar to the Scottish SSLN scores. The falling PISA scores in Sweden made headlines because of a study by Gabriel Heller Sahlgren suggesting that the drop in Swedish PISA scores was due to an increase in the number of immigrant children in Swedish schools (Sahlgren 2015). This reveals the tensions of relying on PISA scores on their own without valuing pupils' social skills, cultural learning and other benefits resulting from the inclusion of diverse populations within educational settings.

Measures of attainment create borders and boundaries which inhibit global and inclusive perspectives of equity. Problems arise when schools or nations work towards equity only within their own boundaries. Additional problems arise due a lack of clarity regarding the terminology used to describe the inequity.

Comparing the research from Sweden, Northern Ireland and England is very difficult when different terminology is used in each location. In Northern Ireland Burns et al. measured *achievement*, in England educational *outcomes* were compared, and in the Scottish SSNL *attainment* is used. Attainment is the word favoured for use in quantitative comparisons, such as data generated by OECD, UN, SSLN, tariff scores, and league tables to describe educational achievements that are measurable “against specific targets or criteria and confirmed by evidence such as test or examination results” (Wallace 2009: 6). As defined in the *Oxford English Dictionary* attainment is “a thing achieved, especially a skill or educational achievement”. Similarly, achievement is defined as “a thing done successfully with effort, skill, or courage”. It is not surprising that these terms are often interchanged and yet within educational literature there appears to be a difference in the usage of these words. A distinction between these terms and their uses must be made.

One difference between achievement and attainment appears to be the assumptions that are made about the timeframe in which the assessment takes place. In the case of attainment, the skill or ability is assessed as a snapshot over a short period of time; whereas, achievement often refers to progress over a longer time period. A significant measure of attainment in Scotland is the passing of five Higher examinations in S5. Each year the Scottish Government releases examination attainment data that is used by the media to construct league tables of the top performing schools. The percentage of S4 pupils in each school who go on to S5 and pass five or more Highers is used to rank each secondary school. This attainment data only represents examination passes.

In England an attempt has been made to use more than just raw examination results. Measurements have also included the progress that pupils make between two tests. In this way the ‘value’ that had been ‘added’ by the school was calculated (Bradbury 2011: 277). The value added system meant that “schools were now responsible for improving pupils by ‘adding value’ to them, and could be judged on this basis” (Bradbury 2011: 278). In addition to these measures of added value, in 2009 contextual factors also started being

used. The contextual factors included: prior attainment, gender, special needs, first language, pupil mobility, age, looked-after children, ethnicity, free school meal entitlement, income deprivation (Bradbury 2011: 280). Using these contextual factors pupils were separated into various categories. Coefficients were used to predict expected progress for each category of pupil. Bradbury contends that although contextual value added attainment “is presented as neutral, mathematical and ‘fairer’, it holds within it the potential to seriously damage teachers’ expectations of some groups of pupils and to increase existing inequalities” (2011: 289).

Despite attempts to equalise the use of attainment data, contextual value added scores do not include a broad range of measures such as personal aspiration and well-being. When personal aspiration and well-being are considered, then other terms such as intelligent accountability measures (Association for School and College Leaders [ASCL] 2003; Hopkins 2007; Sahlberg 2007, 2010) or achievement are generally used instead of attainment. Attainment measures on their own do not value aspects of equity that cannot be measured against standard targets or criteria. An additional concept is needed which can apply not only to educational equality and that which can be measured to be equal, but also to educational equity and that which relates to fairness and justice.

Amartya Sen’s capability approach

One such concept is capability as it is used by Amartya Sen in the capability approach. Amartya Sen is an economist who, as part of a team, proposed an alternative measure of international development. As a replacement for gross domestic product (GDP) to measure the well-being of individuals and communities the team of economists created the Human Development Index (HDI). This measure of one’s ability to have the “capabilities and freedom to do and be what they desired” (ul Haq referenced by Adair 2014: 224) included a range of indicators such as economic, educational, health and political indicators. By not simply focusing on economic input, such as how much money people have to spend, or on output, such as how much people are able to produce, the focus is on the well-being of people on a daily basis; for example, the opportunities people have to lead lives that are in accordance with their values and needs. By building on this conceptual framework Sen (1999) contends agency is required to enable an individual or a community to choose, express, influence and make decisions to expand their capabilities.

This understanding of the pre-requisites for the development of one's capability set is called the capability approach. The capability approach does not provide a complete theory or model, but it does provide a framework for evaluating degrees of inequity. The capability approach suggests the starting point or base should be "what people are effectively able to do and to be; that is, on their capabilities" (Robeyns 2005: 93). While capabilities provide the freedom to achieve, functionings are personal achievements:

The relevant functionings can vary from such elementary things as being adequately nourished, being in good health, avoiding escapable morbidity and premature mortality, to more complex achievements such as having a decent and valuable job, not suffering from lack of self-respect, taking an active part in the life of the community, and so on (Robeyns 2016: 2.2).

An individual learner's freedom to pursue achievements that they value is central to Sen's capability approach. This is one of the differences between capabilities, outcomes, attainment or achievement. In the case of achievement, attainment or outcomes a teacher or another outside source can decide the parameters of success; whereas, in the case of a capability, only the individual can determine the parameters of their success. A comparison of the terms achievement, attainment, outcomes and capabilities can be found in Table 5.

	Achievement	Attainment	Outcomes	Capabilities
Key ideas	A thing done successfully with effort, skill, or courage (Oxford English Dictionary) Pertains to what is measurable and also to what is immeasurable	A thing achieved, especially a skill or educational achievement (OED) The current use of this word usually pertains to that which is measurable	... a written statement of what the successful learner is expected to be able to do at the end of the unit, or qualification (Scottish Government)	Freedom to be and do what an individual values is worth doing and being
Empirical questions	Are some educational achievements more relevant to inequity than others?	Are the SSLN, PISA, tariff scores or other measures of attainment useful for measuring educational inequity?	In an equitable education system, what provisions are provided for pupils who do not reach the intended outcomes?	Does providing freedom to gain access to capabilities for one group of pupils detract from another group's freedom?

Table 5: Achievement, attainment, outcomes and capabilities

The capability approach is different from other approaches pertaining to the provision of equality of resources or equality of outcomes. It does not deny the importance of resources or outcomes, but includes these alongside issues regarding equality of choice such that difference and diversity are acknowledged allowing an individual or a group of individuals to be and to do what they value. Well-being and flourishing in this context include the freedom to think critically and rationally and to have choice in what one values, feels, believes and achieves.

Literature on the capability approach has included different interpretations of ‘basic capabilities’. According to Robeyns:

Basic capabilities refer to the freedom to do some basic things considered necessary for survival and to avoid or escape poverty or other serious deprivations (2016: 2.6).

Many who have sought to operationalise the capability approach have devised lists of capabilities. Of Martha Nussbaum’s list of ten central capabilities, the most applicable to education is the fourth capability which pertains to the ability to:

... use the senses, to imagine, think, and reason – and to do these things in a ‘truly human’ way, a way informed and cultivated by an adequate education, including, but by no means limited to, literacy and basic mathematical and scientific training (Nussbaum 2011: 33).

While basic capabilities may be defined precisely, the overall notion of capabilities includes a broad range:

It is important to acknowledge that the capability approach is not restricted to poverty and deprivation analysis but can also serve as a framework for, say, project or policy evaluations or inequality measurement in non-poor communities (Robeyns 2016: 2.6).

Sen argues that the starting point or base for such evaluations should be on people’s capabilities or on what one is able to be and do (Sen 1999). Choosing capabilities as a starting point acknowledges the diversity of individuals:

[I]ndividuals are diverse and that therefore providing some notional level playing field misses the point.... His solution is to argue for – and attempt to measure - the ‘capability’ to achieve various essential functionings (Platt 2011: 10).

Sen’s recognition of individual diversity and the role of human agency contrasts with Bourdieu’s focus on the social structures that create the conditions for *habitus*. Rather than the durable structure of *habitus*, Sen focuses on the autonomy of the individual while balancing each individual’s absolute needs (or capabilities) with needs that are relative to one’s community. Capabilities and needs differ depending on the society in which one

lives. For example, a pupil living in a particular society may require a unique level of capabilities to “lead a life without shame” (Sen 1992: 18). As Sen puts it, “Equal consideration for all may demand very unequal treatment in favour of the disadvantaged” (Sen 1992: 1). Providing an equal starting point for students and teachers (i.e. same resources for every school or every child) is unlikely to result in equality of capabilities or functionings. Equitable education requires greater resources provided for some schools and for some students.

A child may not be in a position to make long term choices enabling them to develop the required level of capabilities, but they can be afforded opportunities to gradually move towards greater human agency:

We want an approach that is respectful of each person’s struggle for flourishing, that treats each person as an end and as a source of agency and worth in her own right...leaving individuals a wide space for important types of choice and meaningful affiliation (Nussbaum 2000: 69).

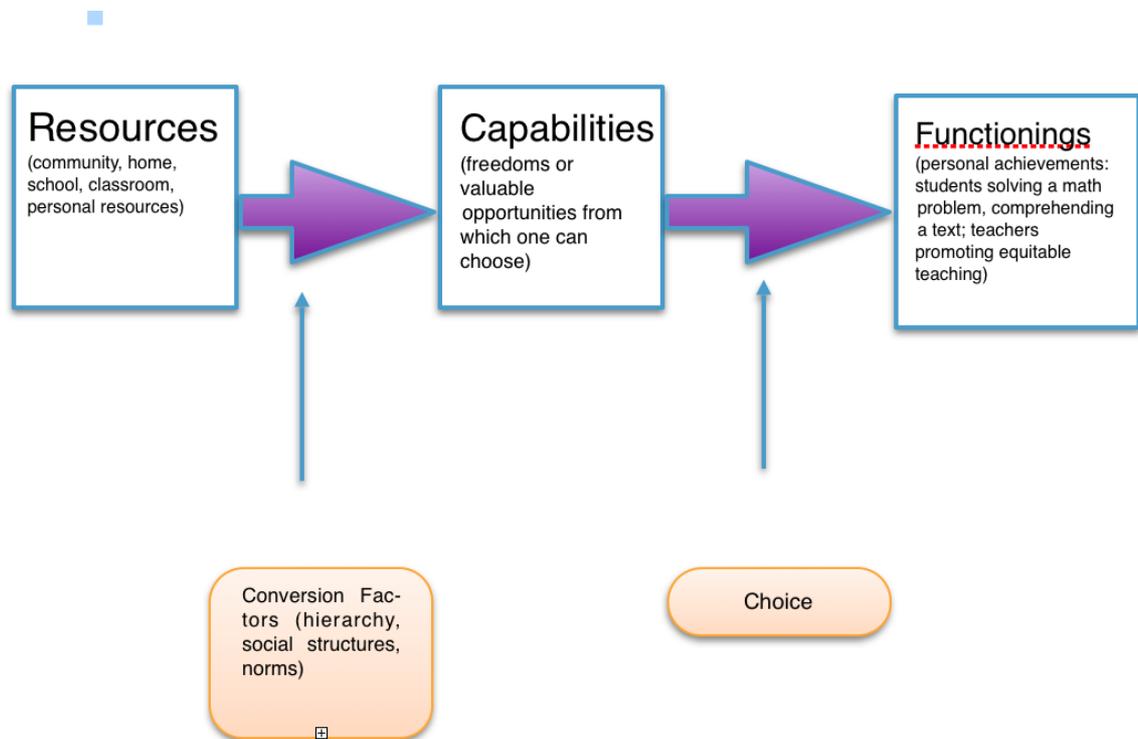
“The notion of *freedom to choose* is thus built into the notion of capability” (Nussbaum 2011: 25). The capability approach prioritises human agency and the autonomy of the individual as a means of achieving greater equity, however, these priorities must be carefully balanced with community:

...freedom does not always protect individuals since it may mean freedom to starve, freedom to be beaten by someone else, or freedom to enter uneven exchange. Freedom to choose, with the ability to exchange and transact, and the capacity to behave in accord with one’s chosen values seems preferable to situations devoid of the ability to make choices (Engerman 2005: 191).

Applying Sen’s capability approach to a classroom requires a careful balance within the context of a community. The capability approach does not suggest unlimited freedom is possible or desirable, but rather the pursuit of increased freedom in a supportive and respectful environment can increase the likelihood that opportunities will exist for the fostering of more equitable education. The provision of the freedom to choose in an environment of respect requires conversion factors.

Conversion factors

In the context of schools, children and educational professionals come to the setting with a variety of resources. Conversion factors are the personal, social or environmental factors that foster or inhibit the conversion of personal resources into outcomes. Personal conversion factors include reading skills and intelligence while social conversion factors include: “public policies, social norms, practices that unfairly discriminate, societal hierarchies, or power relations” (Robeyns 2016: 2.4). Environmental conversion factors might include climate, stability of buildings, means of transportation and communication. (Robeyns 2016). Once these factors have enabled the conversion of resources into valuable opportunities or capabilities individuals have the freedom to achieve functionings.



adapted from Robeyns 2005, p.98

Figure 3: The capability approach

Figure 3 outlines a model of the capability approach that begins with resources (the means to achieve). Resources have the potential to be converted into capabilities (the freedom to achieve) and if chosen, develop into functionings (achievements). Conversion factors including objective socio-cultural influences and subjective perceptions (Stoecklin and Bonvin 2014) influence this process. Figure 3 is a helpful means of situating ‘capabilities’ centrally and powerfully between resources and functionings. The main focus of the capability approach is not on inputs such as resources, nor on outputs such as functionings or outcomes, but instead on capabilities. Capabilities are the freedoms and opportunities resulting from the conversion of resources. Capabilities are centrally positioned as the powerful means of choosing and achieving functionings.

Modelling the capability approach using the diagram above presents a limitation in that it suggests the capability approach as a linear process. Realistically, the capability approach has a recursive or cyclical aspect since functionings can retroact on the social definition of resources and become part of the conversion factors developing these resources into an evolving capability set (Stoecklin and Bonvin 2014). This model also simplifies the capability approach’s application to education since education is both a “capability in itself, and education is also understood to be made up of a number of separate but intersecting and overlapping constitutive capabilities” (Walker 2006: 165). Despite the limitations of this linear model, it can be a starting point to be used for applying the capability approach on a micro-level to examples from education. A refocusing of the capability approach at a microscopic level or a scaling down extends its use beyond Amartya Sen’s original intentions; however, it is a useful way of interpreting and evaluating the degree of equity in situations and behaviours in the context of education.

Emphasis should be on the set of capabilities from which the child can choose since functionings can conceal the extent of a child’s available freedoms. A functioning is merely an achievement that may or may not have involved real freedom or choice. A set of capabilities includes available freedoms and valued opportunities. Evaluating the opportunities provided for children to access these functionings requires a consideration of the conversion factors that have fostered or inhibited the child’s access to capabilities.

Operationalisation of the concept of equity

Equity can be defined in terms of the opportunities and freedoms available to choose what one achieves, values, feels and believes. To evaluate access to these freedoms and

opportunities Sen proposes an examination of capabilities; i.e. what people are able to be and to do. Some of the capabilities applicable to the educational professionals in this study include:

- The freedom to choose new approaches to implement in the classroom.
- The opportunity to participate as a bridge or broker within and between networks.
- The opportunity to choose to be part of a network.
- The freedom to experiment and innovate.
- The freedom to design and implement appropriate assessment.

Capabilities applicable to the pupils in this study include:

- The freedom to choose which method to use to solve a maths word problem.
- The freedom to choose to participate in a classroom community or to work independently.
- The freedom to choose which text to read or which strategy to use when deciphering and comprehending written material.

Using the capability approach the availability of these capabilities is limited by conversion factors. The conversion factors identified in this study include social norms such as: collective values and relationships; classroom, school or system climates and their ability to encourage or discourage cooperation, competitiveness, acceptance of difference or tendency for ridicule; assessment procedures; bridging and bonding capital allowing exchange of knowledge and understanding. Evidence of these conversion factors was found in the collected data and used to operationalise the concept of equity.

An evaluation of the extent to which pupils have the freedom to achieve capabilities that they value can illuminate the extent to which education is equitable. Evaluating educational equity from this perspective presents a contrast to traditional processes that emphasise what people possess or have done (Brunner and Watson 2015). Applying the capability approach to studies of educational equity requires a consideration of more than what pupils possess or have done, such as on assessments and examinations. A starting point is the examination of the positive conversion factors that “enable those students to

derive the same level of benefit” (Kelly 2012: 285). Consideration must be given to questions such as: What do pupils value? What choices are available in the classroom? Where can school qualifications lead? What are pupils able to do with their schooling? In Scotland, additional data are needed about pupils such as their opportunities to choose subjects they value and subjects leading to positive leaver destinations that they value. Despite recent changes to how statistical data regarding leaver destinations are published in Scotland, a leaver destination continues to be designated as ‘positive’ without consultation with school leavers about whether or not they value the job, the apprenticeship, or the course they are doing. The most recent edition of the Initial Destinations of Senior Phase School Leavers (Scottish Government) states that destinations are based on either administrative data or self-reporting and include “higher education, further education, training, voluntary work, employment and activity agreements” (2017a: 13). The findings included in the report (Scottish Government 2017a) do not recognize the importance of individuals’ perceptions and desires regarding their aspirations and goals. An equitable evaluation of Scotland’s education system should include the degree to which young people value their outcomes. Without the inclusion of young people’s values, aspects of the education system are failing to be positive conversion factors. Learners should be provided with the opportunity to choose, express, influence or make decisions to allow the expansion of their capabilities. Jennifer Keys Adair (2014) compares learning environments that allow learners to develop their potential by applying skills to a variety of circumstances as opposed to an environment that inhibits the development of capabilities.

Capabilities in community

The application of the capability approach to educational contexts merits a discussion of the role of community in providing the necessary structure to foster capabilities. Communities provide conversion factors to convert resources into capabilities. For example, Jean Piaget explains the responsibility of the teacher to establish a particular ethos within the classroom community:

[T]he teacher must seek to establish an ethos of equality, since in equality no particular individual has a monopoly on the truth and, emotionally, each can present their arguments without ridicule (Piaget 1965 referenced by Rowell 1989: 150).

Piaget describes an equitable environment in which difference is accepted free of ridicule. He also provides a detailed description of the social factors necessary to foster autonomy:

Cooperation alone leads to autonomy. With regard to logic, cooperation is at first a source of criticism; thanks to the mutual control which it introduces, it suppresses both the spontaneous conviction that characterises egocentrism and the blind faith in adult authority. Thus, discussion gives rise to reflection and objective verification (Piaget 1932/1965: 403).

Alongside Piaget's emphasis on autonomy is a mention of mutual control. From Piaget's perspective freedom is tapered by mechanisms of control. The freedom to place one's trust blindly or the freedom to take an egocentric standpoint are both limited by social practices. The capability approach includes these mechanisms of control in the form of conversion factors. These controlling factors have the potential to be sources of structured support or barriers. The positive structures of support named by Piaget (1932/1965) include: cooperation, involving criticism in a safe environment; suppression of egocentrism and suppression of a blind faith in authority; discussions and reflections. Providing these necessary conditions for the development of a learner's capability set requires overcoming numerous social and structural challenges.

Accompanying the challenges listed by Piaget (1932/1965) are many other possible challenges to the development of a child's capability set:

If the education system takes an extremely 'top-down' approach and stresses competitiveness, children tend to study subjects that are required for examination success. Under this kind of education system, children find difficulties in learning to become autonomous. In this case, the children have no choice but to follow what others tell them to do and are considered to have limited capabilities (Saito 2003: 27).

These challenges may be attributed to an absence of the classroom processes described by Piaget, as well as school accountability mechanisms.

Limitations

Conventional school accountability mechanisms are not capable of measuring the degree to which a learner or teacher has choice. Similarly, determining the degree to which an individual values their achievements can be equally difficult. The capability approach's inclusion of these concepts demands measures that can accommodate an evaluation of the relationship between inequity and the exercise of agency. The challenges for the research design of a study incorporating the capability approach are considered in the methodology chapter.

A further limitation of the choice of the capability approach was the difficulty of applying it to school collaboration. Initially, the topics of school collaboration and inequity were

explored with the hope that the literature might provide a theoretical relationship between these two separate concepts. Educational inequity is a complex problem, but may be applicable to school-to-school collaboration if school collaboration is a suitable approach or intervention. A dilemma arose when I attempted to marry the problem of inequity to the possible intervention of collaboration. The collaborative approaches found in the literature and the related theories did not clearly articulate with methods of ameliorating inequity. The literature surrounding educational inequity comes from a critical theory paradigm. This critical theory paradigm tends to promote the exposition of social and political contexts to generate theory. In contrast, the literature surrounding school collaboration tends to emerge from pragmatism using empirical evidence to propose changes to practice. Attempting to marry these paradigms was not possible since consideration of each led to different theoretical and methodological approaches. These different theoretical and methodological approaches are discussed in chapters four and five.

Chapter summary

Amartya Sen's conversion factors promote the conversion of resources into valuable opportunities to provide freedom and access to capabilities. Examining educational contexts using this framework involves identifying the presence or absence of these freedoms that can support or challenge the conversion of resources into capabilities. Providing the means for both educational professionals and pupils to have greater access to capabilities is a means of providing potential access to more equitable education.

Exploring the connections between capabilities and inequity allows for a clearer exploration of the definitions of these terms. A discernment of what is just relates to equity, whereas the word inequality appears to limit proposed solutions to a focus on equality and what can be measured to be equal, such as attainment. In contrast, the use of the term inequity broadens the issue to include capabilities and fairness. The choice of terminology is significant because it has implications for the solutions proposed.

Educational inequity has motivated a number of policy responses including those promoting collaboration. The next chapter clarifies the terminology used to describe collaboration, describes the empirical evidence and outlines a theoretical framework to use for investigating school to school collaboration.

Chapter four: School to school collaboration

Defining networks, partnerships and collaboration

Networks vary depending on their values, purposes, interactions, and structure. For example, a collegial group of teachers who all teach the same grade level or subject area may be referred to as a network despite not sharing an articulated vision and purpose. A network such as this has the potential to become a partnership if the relationships become more formalised in their aims and purpose. A specific type of collaboration, a partnership, is formed when an agreement between individuals or groups results in the sharing of “responsibility for assessing the need for action, determining the type of action to be taken and agreeing the means of implementation” (Sullivan and Skelcher 2002 :5). In comparison to a partnership, a network can vary in the formality of the relationships between the individuals or groups and it can also vary in the balance between collective and individual action.

Collaborative school partnerships are defined by Bell et al. as:

Groups or systems of interconnected people and/or organisations (including schools) whose aims and purposes include the improvement of learning, and whose structure and organisation include explicit strategies designed to achieve these aims (2003: 29).

As the balance moves towards collective rather than individual action the members of the network share a greater commitment to collective action for the purpose of achieving the network’s aims. In a school network with formalised relationships, staff or pupils or parents or other agencies come together for professional purposes and motivations, and the operational connections between these people include planned meetings, working groups or cross-school research teams (Hadfield and Chapman 2009). As a result of these connections, the interactions in a school network may take the form of:

...shared learning experiences, through joint working, such as planning together, to undertaking collaborative change, such as working on curricular innovations and practitioner enquiry (Hadfield and Chapman 2009: 5).

These interactions are most constructively applied to the network’s aim if there is a “balance between the degree of collective and individual agency...a balance we have termed networked agency” (Hadfield and Chapman 2009: 6). The networked agency is aligned with an explicit aim or purpose in school networks.

When teachers engage in collaborative activity with each other and with outside agencies and community members they gain opportunities to work on a joint project. If the joint project is viewed simply as an instrumental form of activity the result may be that:

...other teachers are regarded as possible sources of information and resources, but not as deserving of attention or sustained interest once the task has been completed and the driving force of the unity dissipates, disappears or becomes tenuous (Fielding 1999: 16).

Rather than the short term instrumental forms of activity described by Fielding, it is preferable to develop sustainable strategies. Collaboration in the face of challenging circumstances, but characterised by a shared or common interest in the outcome, (Sullivan and Sketcher 2002) may prove to be more sustainable. Michael Fielding describes this type of collaboration as that which takes place within the context of a collegial relationship:

...transformed from a narrowly functional activity circumscribed by instrumental rationality into a joint undertaking informed by the ideals and aspirations of a collective practice infused by value rationality and the commitment to valued social ends (Fielding 1999: 17).

This type of community is characterised by shared ideals, aspirations and a commitment to valued social ends. Examples might include: a shared commitment to working towards ameliorating educational inequity; a shared aspiration to provide pupils with opportunities to experience more freedom, opportunities and achievements; or shared ideals regarding the role of school collaboration. Providing opportunities for the development of collective values can create the potential for sustainable relationships rather than short-term knowledge exchanges. To develop relationships transformed by working towards a common goal and guided by collective values requires sufficient time for individuals to share experiences and conversations together. Sufficient time is needed to develop these types of relationships, as well as commitment to a particular social end.

Fielding advocates a type of commitment that includes “a radical and universal inclusiveness which embraces, not just other teachers and not just one’s students, but also parents and other members of the community” (Fielding 1999: 21). Specifying collaboration in this way suggests an approach to teaching and an account of collegiality in which teachers seek opportunities to learn with and from all members of the learning community and thus creating “a mutuality of learning” (Fielding 1999: 21). The rationale for an approach that includes collegial relationships relates to the type of personal

interactions between teachers and pupils which can sustain the values of the capability approach by fostering capabilities and developing functionings.

	Collaboration	Partnerships	Networks
Key ideas	“... a way of working with others on a joint project where there is a shared interest in positive outcomes” (Sullivan and Skelcher 2002, p.1)	“The most common manifestation of collaboration...” (Sullivan and Skelcher 2002, p. 5)	Can be based on either formal or informal relationships
Empirical questions	What type of school collaboration is most effective at tackling inequity?	What barriers or blockages prevent a school partnership from achieving positive outcomes?	Can school networks build capacity or increase capital in a way that can help schools to effectively tackle inequity?

Table 6: Collaboration, partnerships and networks

Table 6 compares the terms collaboration, partnerships and networks. For the purposes of my own research I have chosen to use the broadest of these terms, collaboration, which includes the work of both networks and partnerships. So far, I have explained my choice of terms: inequity (rather than inequality, disadvantage or deprivation), capabilities (rather than attainment, achievement or outcomes), and collaboration (rather than networks or partnerships). A summary is provided in Table 7.

	Inequity	Achievement	Collaboration
Key ideas	Unfair distribution (of resources, opportunities and outcomes); misrecognition of ways of being	A thing done successfully with effort, skill, or courage (OED)	“... a way of working with others on a joint project where there is a shared interest in positive outcomes” (Sullivan and Skelcher 2002, p. 1)
Empirical questions	How does recognition of the identities and differences of pupils promote more equitable education?	Are some educational achievements more relevant to inequity than others?	What type of school collaboration is most effective at tackling inequity?

Table 7: Inequity, achievement and collaboration

Collaborative motivation: Why collaborate?

The motivation for participating in collaboration has been explained by Sullivan and Skelcher (2002) as being driven by optimistic, pessimistic or realistic perspectives.

The optimistic perspective suggests:

[C]ollaboration will result in positive outcomes or improvements for the system as a whole and that the stakeholders share a level of altruism...positive outcomes for the system override the desire for sectional gain (Sullivan and Skelcher 2002: 37).

From the optimistic perspective the intended results of the collaboration are mutually beneficial for participants. A variation of the optimistic perspective is exchange theory. Exchange theory suggests that through altruistic behaviours and respect for others' autonomy the organisation's goals or objectives are realised (Sullivan and Skelcher 2002). Chapman and Muijs mention the sharing and streamlining of a number of resources including "the streamlining of financial mechanisms to achieve economies of scale" (2014: 385). This type of altruistic behaviour is also mentioned by Noam and Tillinger (2004) in reference to the common good and also Salokangas and Chapman (2012) in reference to mutualistic organisations. This altruistic or optimistic desire for improvement is one of the three types of motivation mentioned by Sullivan and Skelcher (2002).

Another theory within the optimistic perspective that has a specific intended result is collaborative empowerment (Himmelman 1996 quoted by Sullivan and Skelcher 2002). In this case the intended results are community empowerment. A community is given "the capacity to set priorities and control resources that are essential for increasing community self-determination" (Sullivan and Skelcher 2002: 30). This is realised through collaboration beginning within the organisation and then spreading out to collaboration with outside organisations (Sullivan and Skelcher 2002). Regime theory is a version of collaboration from the optimistic perspective in which the intended purpose of the collaboration is to develop "a means of governing in a context where governments have limited power and influence" (Sullivan and Skelcher 2002: 39). In this example collaboration happens between public and private sectors for the mutual benefit of all participants.

Other examples of collaboration may not necessarily be mutually beneficial for all participants involved. For example, the intended purpose of collaboration for the participants may be to "preserve or enhance their power, prioritising personal or organisational gain above all else" (Sullivan and Skelcher 2002: 39). This sort of pessimistic driver is suggested by two theories. One source of motivation is "the acquisition and defence of an adequate supply of resources" (Sullivan and Skelcher 2002: 40). This derives from resource-dependency theory. The second driver for collaboration is to realise "surface-level objectives to do with service delivery and achieving a change in

the substructure...to secure resources” (Sullivan and Skelcher 2002: 41). This is found in Benson’s study (1975) of the political economy of inter-organisational networks.

The altruistic desire for improvement (optimistic perspective) is sometimes combined with the need for scarce resources (pessimistic perspective). Alter and Hage (1993) suggest that due to the many changes experienced by organisations collaboration is a necessary process for the success of the evolution of the organisation. Schools in Scotland tackling inequities have recently experienced a plethora of changes such as new National qualifications, a new curriculum, and new professional registration requirements for teachers. In order to succeed in this changing environment, schools and local authorities may be motivated to collaborate with one another. Other sources of motivation may be a desire to ameliorate inequity or a desire for increased autonomy. The extent to which schools and authorities succeed in any one of these endeavours is dependent upon a number of factors. Their motivation to collaborate may be one possible factor influencing the success of their collaboration.

Is collaboration a suitable strategy for tackling inequity?

Existing research suggests redistribution of economic resources and opportunities has only been partly successful in addressing educational inequities (Raffo 2011). Combining economic redistribution with recognition of cultural and individual differences has been recommended from the perspective of social justice theories applied to a variety of contexts including education (Fraser 1996; Raffo 2011; Sen 1992). Fostering such recognition and representation requires the generation of context specific knowledge. Context specific knowledge may be generated when teachers and school leaders are provided with opportunities to engage in collaborative inquiry with each other and with outside authorities and agencies (Ainscow et al. 2012a). The generation of new knowledge and methods through teachers’ collaborations with one another and with documentation is a necessary step to developing the recognition required for the tackling of educational inequity. The generation of new knowledge has already been attempted through the reforming of structure, but on its own this strategy is not sufficient as stated by Barber:

It is time to recognize that reforming structures alone will not bring about real change, least of all in education, where quality depends so heavily on a chaotic myriad of personal interactions. We need to understand that chaos matters too (1996: 160).

The significance of the personal interactions mentioned above and the challenge of understanding such personal interactions suggest the need for a research approach to educational inequity that acknowledges the ‘chaotic myriad of personal interactions’ (Barber 1996: 160). A combined focus on collaborative relationships and educational inequity provides the potential for a broad examination of inequity and its contributing factors.

Empirical evidence

The use of collaborative partnerships for the purpose of tackling inequity is an approach which combines school-to-school networking with locally initiated inquiry. As is discussed below, the knowledge supporting this approach has been generated from school-based networks such as: Professional Actions and Cultures of Teaching (PACT); Improving the Quality of Education for All (IQEA); High Reliability Schools; Understanding and Developing Inclusive Practices in Schools; Networked Learning Communities Programme; Schools of Ambition; Equity Research Network; Manchester City Challenge programme; Coalition of Research Schools; Harlem Children’s Zone; and Low performing school districts (Daly and Finnigan 2011). These collaborative initiatives from the United Kingdom and the United States provide empirical evidence of the potential of school collaboration.

Professional Actions and Cultures of Teaching (PACT), an international group of researchers, published their research findings regarding the daily work of teachers as they manage challenges of on-going change (Day et al. 2000). One of the PACT studies involving 234 educational professionals in Australia identified the extent to which participatory decision making was evident. This study revealed:

... collaboration and shared decision making can easily become a control mechanism aimed at manipulating people, giving them the illusion of voice, rather than a device which can enhance and develop teacher professionalism (Day et al. 2000: 5).

This finding which suggests school collaboration has the potential to result in the control and manipulation of individuals can be contrasted to another Australian study researching The National Schools Network (NSN). In this study, a specific type of collaboration resulted in positive benefits. When educational professionals were engaged in action research extending beyond an individual school various benefits were noted. In these situations, expertise is “viewed as a two-way street by the network of partners rather than the sole possession of just one group...teachers take control by providing moral and

intellectual leadership in order to ensure a high quality of student learning (Day et al. 2000: 3). To ensure conditions are met to foster these positive benefits of collaboration, the research of the PACT suggests additional factors must also be considered.

The implementation of reforms, initiatives or innovations such as increased collaboration should be accompanied by favourable mechanisms of support for educational professionals. For example, a study of the effect of reforms and policy initiatives on the personal and professional lives of 14 teachers in the UK found a contrast between “many older professionals who have been alienated or unable to cope” (Day et al. 2000: 127) and other professionals who demonstrated resilience despite the initial “shock, innovation fatigue and sometimes disillusionment of imposed reforms” (Day et al. 2000: 4). Further insight into this contrast is provided by the research of Morris, Chan and Ling (2000: 53) conducted in schools in Hong Kong. Their findings suggest that experienced teachers draw on their prior experiences and understandings to interpret reform. These teachers may have already developed means of coping with change:

It is not uncommon to find several non-complementary innovations being implemented within the education system at the same time. These generate feelings of anxiety, stress and frustration and create an atmosphere of uncertainty, confusion and insecurity. Energies are often focused on simply coping with change and keeping up with new developments, so inhibiting teachers from creative and risk-taking pedagogic endeavours (Day et al. 2000: 4).

Fostering an atmosphere of creative risk-taking requires a specialised environment in which resources are not being exhausted and teachers are protected from an atmosphere of insecurity and confusion.

With these observations in mind, however, it is not surprising that some teachers may be wary of involvement in new initiatives and reforms. For initiatives involving collaborative work teachers may be aware of the potential pitfalls:

...increased demands for meetings and paperwork which address managerial, bureaucratic concerns rather than teachers’ pedagogical issues and problems (Day et al. 2000: 2).

Together, the findings of the PACT research provide guidance for school collaboration. The greatest impact of collaboration resulted from action research projects extending beyond school boundaries and involving educational professionals who were supported to endure initial shock, innovation fatigue and disillusionment. These teachers reported having found the space to manoeuvre and redefine their professional and personal identities and “reassert autonomy” (Day 2000: 127).

Improving the Quality of Education for All (IQEA) was a 1980s collaboration initiated at the University of Cambridge. It began with the formation of networks of pupils, staff, parents, and university researchers. The aim of each network was to focus on school improvement, but the approach was different from traditional ones: “Rather than seeking to impose externally validated models of improvement, we were seeking to support schools in creating their own models” (Ainscow et al. 2012b: 22). The findings from these collaborations suggested “inquiry-based analyses can be a powerful means of stimulating schools’ deliberations as they design their own improvement strategies” (Ainscow et al. 2012a: 200). The benefits of these collaborations were seen to be two-fold:

School improvement is thus seen as a process that not only secures improvement in student learning but also acculturates and transforms school communities into learning communities (Beresford et al. 2003).

High Reliability Schools in the 1990s had a similar approach to IQEA. School improvement was not about putting “into practice ‘right ways of doing things’ but upon getting schools to use the right concepts and systems that enabled them to be intelligent organisations” (Reynolds 2012: 215). The success of these networks of secondary schools was reflected by changes to the system which had “become less a group of individual schools and more a system of interrelated, mutually supporting, reliability-focused schools” (Schaffer et al. 2012). Additionally, the examination results of the pupils in the High Reliability Schools were observed to improve rapidly (Reynolds 2012).

Understanding and Developing Inclusive Practices in Schools was an initiative between 2000 and 2004 involving 25 urban schools, their associated local authorities and three universities. The findings of this collaborative research project suggest collaboration between schools is more effective than if it is restricted to a single school (Ainscow et al. 2012c). One of the difficulties of collaborative efforts within a school was that, “...deeply held beliefs within schools prevented the experimentation that is necessary” (Ainscow et al. 2012c: 201). This initiative used collaborative inquiry to provide opportunities for practitioners to be confronted by research evidence about their practice. A critical dimension was infused into the collaborative inquiry such that with the encouragement of critical friends the practitioners were able to focus on issues of social justice, recognise the non-inclusive elements of their practice, and “find ways of making them more inclusive” (Ainscow et al. 2016: 11).

The National College for School Leadership's (NCSL) **Networked Learning Communities Programme** provided evidence of the efficacy of teacher collaboration involving more than one school. This was a collaborative initiative in England beginning in 2002. The findings suggest colleagues beyond their own school may be more likely to take risks revealing their own weaknesses and gaps in their knowledge than those teachers collaborating within their own school (Department for Education (DfE) 2005; Earl and Katz 2005).

Schools of Ambition in Scotland involved 52 schools from 2005 - 2009. The methods used in the Schools of Ambition project were consistent with research that links locally initiated action research, leadership development, and professional development with pupil outcomes (Ainscow et al. 2012b; Chapman 2015). The schools involved in Schools of Ambition, however, were operating independently of other schools in their creation of transformative plans. Competing beliefs or priorities were listed as an inhibitor to success in the Schools of Ambition 2009 report (Scottish Government 2009; Menter et al. 2010).

The **Stockborough Equity Research Network** (SERN) operated in England between 2006 and 2011 (Ainscow et al. 2012b). Partner schools in this programme sought to adopt a broad set of research questions to accommodate differing views of inequity in each context. Initially involving only four secondary schools, the network grew to involve 14 secondary schools. The long-term purpose was to “develop ways of working that would challenge practices, assumptions, and beliefs of staff, and which would help to create a stimulus for further sustainable improvement” (Ainscow et al. 2016). In addition to involving educational professionals from the secondary schools, a university team assisted with the setting up of staff inquiry groups to participate in collaborative practitioner-led inquiries. Challenges faced by the schools in these disadvantaged areas of England were numerous and included: the closure of one of the founding schools, intense pressure to look after each school's individual interests, headteachers replaced by acting heads, and diminished funding in part due to the national and global recession. Despite these intense pressures, the network continued. The impact of these inquiry groups was the sharing of:

...evidence with their colleagues at department or whole-school meetings. To varying degrees these challenged and stimulated thinking, and in some instances caused a degree of discomfort. Some of the investigations led on to tangible developments in practices in the schools...procedural changes to admissions of new students...to more subtle individual changes relating to how the staff interacted with students in class (Ainscow et al. 2012b: 47-48).

As a network seeking to address issues of inequitable education the evidence suggested that the purpose of the network, to challenge existing practices and assumptions regarding inequity by developing new ways of working, was realised. In addition, the sustainability of this network over a number of years was noteworthy considering the challenges encountered by these disadvantaged schools.

The **Manchester City Challenge** found further benefits to school partnerships when the collaboration extended beyond schools and across the boundaries of local education authorities. Partnerships between schools residing at greater distances appeared to benefit from the elimination of competition that exists between schools serving the same neighbourhoods (Ainscow 2012a). Ainscow contends that these long-reaching partnerships "...allowed a wider range of pupils to benefit from best practices by both transferring and 'generating context specific knowledge' " (Ainscow 2012a: 296). The Manchester City Challenge reports qualitative and quantitative evidence of success based on improvements in 16-year-old pupil results in public examinations. Neither the qualitative nor quantitative results, however, reveal if the improvement affected pupils in all subject areas.

The **Coalition of Research Schools** was launched in 2011 in England. It is a network that includes teaching schools. This network has faced some challenges due to an emphasis on the perceived expertise of the teaching schools where workshops and short courses were offered. The use of workshops and short courses may be less disruptive to the school than a practitioner inquiry approach, but as a result the:

... predominant model involves training activities that present practice as being mainly about the passing on of technical knowledge, rather than as an activity that involves "joint practice development" of the sort that is now widely endorsed by research evidence (Sebba et al. 2012 quoted by Ainscow et al. 2016: 18).

These findings suggest workshops and short courses did not yield the same impact as joint practice development such as collaborative inquiry.

The **Harlem Children's Zone (HCZ)** was designated in the 1990s in a single-block of Harlem to target the needs of children by designing a networked program of community services and charter schools. The success of the Harlem Children's Zone led to its geographical expansion, eventually extending to 97 city blocks of Harlem. Extensive quantitative research by Dobbie and Fryer (2011) concluded that the charter schools of the HCZ were able to significantly increase academic achievement. It was suggested that the

success of these networked schools might be attributed to high quality teachers, good policy choices, and the use of data to inform and differentiate instruction (Dobbie and Fryer 2011).

Low performing school districts in the United States were the focus of research by Daly and Finnigan (2016). A mid-size urban district in the north-eastern United States was investigated using longitudinal quantitative data from 2010 to 2013. Nearly all of the schools were labeled as underperforming. Disappointingly, the ties and relations which might have potentially provided support for improvement were susceptible to a number of negative factors. High-stakes accountability policies appeared to be particularly damaging to the relationships between schools and central offices in low-performing school districts:

...the high stakes involved may result in changes in network structures over time that limit—rather than facilitate—the complex changes necessary to bring about district turnaround (Daly and Finnigan 2011: 40).

The changes to relationships due to the high-stakes accountability were between the schools and the central offices. These relations were observed to “become more bureaucratic and rule-bound” (Daly and Finnigan 2011: 69).

Additionally, evaluation of the low performing school districts found that the fostering of mutually beneficial procedures for the implementation of accountability policies required positive relational linkages between school district administrators and school administrators (Daly and Finnigan 2011). Support was required to maintain relationships over the long term rather than leaving the network vulnerable to network change or network churn:

[N]etwork churn among school and district leaders created an instability of relationships that undermined the potential for organisational learning.... leaders who were most sought for relationships but received less reward and recognition tended to leave (Finnigan, Daly and Liou 2016: 123).

Improving and increasing relations between more peripheral leaders, the less rewarded or less recognised leaders, has the potential to provide longer term support to practitioners seeking to improve educational circumstances for pupils under their care.

² Network churn (Daly et al. 2014) refers to the loss or change of network participants during a study period.

Summary of the evidence base

The greatest impact and sustainability was demonstrated by networks involving more than one school and using a practitioner inquiry-based approach. The IQEA, High Reliability Schools, SERN, PACT and the Coalition of Research Schools reported the transformation of school systems into sustainable communities of learning and improvement. In contrast, less impact was observed in networks such as Schools of Ambition in which schools operated more independently of one another. The Coalition of Research Schools also reported less impact for approaches not involving practitioner inquiry. The networks most applicable to issues of equity for schools in disadvantaged areas faced intense challenges. For example, the low-performing school districts in the USA (Daly and Finnigan 2016) were inhibited by high-stakes accountability, as were the schools in the SERN in England. These studies of networks in disadvantaged areas leave unanswered questions regarding the necessary provision of support needed for networks of schools in disadvantaged areas.

Collaborative inquiry

Collaboration which involves practitioner inquiry or action research supports improvement and change in the practices of educational professionals (Ainscow 2016; Ainscow et al. 2016; DeLuca et al. 2015; Snow et al. 2015; Drew et al. 2016). By participating in ongoing cycles of inquiry teachers are able to develop both their practice and their knowledge. Collaborative inquiry involving teachers in classrooms over an extended period of time satisfies the key components of successful professional development (Cordingley et al. 2003). Reflective practices, such as collaborative inquiry, involve a process of identifying challenges, choosing innovative methods to trial, gathering data and making links to improvement planning in schools and school districts. Benefits of collaborative action research include: the flattening of existing hierarchies (Drew et al. 2016); the prevention of myopic viewpoints; development of mutual support mechanisms; pooled resources (Lieberman, Hoody and Lieberman 2000); and the breaking down of barriers to enable greater access to social capital. Whether collaborative action research takes place within, between or beyond schools, it has been highlighted as a valuable vehicle for positive change (Drew, Priestley and Michael 2016; Snow, Martin and Dismuke 2015; Ainscow et al. 2016; Cochran-Smith 2015; Chapman and Hadfield 2010; Fullan 2013; Chapman et al. 2015; Ainscow 2016). Collaborative inquiry involving networks of many schools (pages 56-60) reaped additional benefits such as:

- the exchange of a wider range of resources, expertise and innovative knowledge across school and local authority boundaries (Ainscow 2016; Chapman et al. 2015)
- the elimination or reduction of competition between schools serving the same area (Ainscow 2016; Ainscow et al. 2012a);
- the disruption of “deeply held beliefs within schools” (Ainscow et al. 2012c: 201)
- a greater willingness of educational professionals to take risks and reveal weaknesses or gaps in knowledge (DfES 2005; Ainscow 2016).

Most of this research has studied the impact of collaboration for educational professionals. There is a limited number of studies providing research regarding the impact of teacher collaboration on pupils but a study conducted in England found that the purposes and aims of the network may show this relationship (Chapman and Muijs 2014). This research concluded that schools partnered with an explicit purpose of improving student outcomes had a greater impact on pupils. Another study that investigated the impact of teacher collaboration on pupils was a study of The Equity Research Network (Ainscow 2012b). This initiative involved pupils from economically disadvantaged backgrounds in 16 schools where teachers’ involvement in the network led to changes to teachers’ practice and after five years an improvement in examination grades. School collaboration has been found to have the greatest impact on students when the collaborative activity has specific and narrow aims, includes changes to existing relationships, structures and policies (Cochran-Smith 2015) and initially involves only a small group of students (Bell et al. 2003).

Lesson study

A specific form of collaboration which has been used and researched internationally is Lesson Study. Research evidence for the effectiveness of Lesson Study can be found in the work of Hadfield et al. (2011) who carried out an independent evaluation of the National Strategy Program. Teacher learning as a result of participation in Lesson Study contributed to improvements in pupil progress in writing and mathematics in more recent studies by Dudley (2012).

Lesson study is a collaborative process used for professional development or for data gathering for research purposes, or for moderation³. Lesson study is an activity in which two or more teachers plan a lesson together and then “go on to observe these lessons unfold in actual classrooms and to discuss their observations” (Fernandez and Yoshida 2009: 2). It is a practice that originated in Japan over a hundred years ago (Makinae 2010), primarily in primary schools and middle schools. After the lesson is carefully planned it is taught by one member of the team while the other members of the team are present in the classroom to observe the pupil learning that the lesson generates. It is the learning that the lesson generates that is being evaluated – NOT the teacher. After the lesson the teachers debrief the lesson by systematically exploring observations that reveal pupil learning and understanding. The attention to detail in meticulously planning the lesson is a reflection of the detail found in any Japanese artistic masterpiece whether it be origami, a martial art, or a classroom lesson. In the years since Lesson Study originated, it has been tested and refined and developed across many other countries and across many age groups. A range of models has emerged that varies depending on the number of teachers involved; the number of times the lesson is revised and/or re-taught; the optional use of videotape; and the number of schools involved and the target group of pupils chosen for observation.

Potential barriers to successful collaboration

Efforts to use collaboration for the purpose of fostering equity are often thwarted by forces that restrict the freedom afforded teachers in classrooms (Daly and Finnigan 2016; Ainscow et al. 2016; Chapman et al. 2015). Maintaining the context for pupils to develop capabilities and to achieve in areas that they choose and value is plagued by challenges. The experiences of educational professionals striving to overcome such barriers to ameliorate inequity are included in this study. Power imbalances and conflicting agendas within and between schools and local authorities jeopardise the needs of those participating in collaboration (Finnigan, Daly and Loiu 2016; Daly et al. 2015).

High staff turnover and leadership challenges are common in underperforming schools (Daly and Finnigan 2011; Finnigan, Daly and Liou 2016). The study of a low-performing

³ Moderation is a term used in Scotland: “to describe approaches for arriving at a shared understanding of standards and expectations for the broad general education” (Scottish Government 2010: 3).

school district in the United States showed how the collaborative learning of educational professionals was disrupted when staff changed from one district to another or from one leadership role to another (Finnigan, Daly and Liou 2016). The four-year study of a school district serving primarily students from low socioeconomic communities showed that approximately half of the school leaders moved in and out of the district over the four years resulting in missed opportunities for the sharing of knowledge regarding research-based practices, social support, and organizational memory (Finnigan, Daly and Liou 2016). Their research highlights specific requirements for successful collaboration among educational professionals serving underperforming schools, namely support for the development of long term relationships built on trust and respect and the avoidance of high stakes accountability policies which increased levels of stress and staff movement.

Accountability policies have also been detrimental to schools in disadvantaged areas due to their tendency to narrow the range of subject areas and activities taught. Such policies restrict curiosity and creativity (Sahlberg 2010) and increase inequalities (Boaler 2003; Au 2013). As an alternative to accountability policies with a narrow focus, there is now a growing research base in support of new and intelligent accountability measures (Darling-Hammond et al. 2016; ASCL 2003; Hopkins 2007; Sahlberg 2007, 2010) including broader sets of indicators, for example: sample-based assessments, social-emotional learning indicators and student, parent and community engagement indicators. Until these new and intelligent accountability measures replace the narrow measures currently used, the successes of schools in disadvantaged areas participating in collaborative partnerships may be hidden.

Political interest in accountability policies has coincided with increased political interest in education and global competition and “increasing decentralisation, privatisation, and collaboration between government agencies, and between government and the private sector” (Muijs, West and Ainscow 2010: 6). The negative impact of these pressures and conflicting agendas originates from outside of school networks, but are experienced most acutely by educational professionals and pupils in struggling schools.

These schools face several other challenges including, at times, an overemphasis on the ‘basics’. A focus on the ‘basics’ may be needed in some contexts as is stated by Muijs et al., “Schools that are in an early phase of improvement, or who appear to be failing, may need ...a focus on the basics” (2004: 170). An overemphasis on the ‘basics’, however, can cause topics outside of basic numeracy, literacy, and life skills to become elitist subjects.

Oversimplified, teacher-centred reductionist teaching poses a constant risk; namely that the required dimension needed for creativity, inquiry and critical consciousness could be neglected. Collaboration in which one or more participants take on the role of a gatekeeper of knowledge has the potential to sustain this elitism. Instead, participants might question, “whether ‘learning networks’ of this sort not only facilitate and perpetuate the ‘transfer’ of knowledge but have effects on how and what knowledge is produced” (Frankham 2006: 672). An awareness of how and what knowledge is being produced, and also by whom and for whom may be beneficial to protect the collaboration from being diminished in scope.

Further differences between successful and unsuccessful collaboration may be illuminated by examining the differences in the participants. Research suggests that “Female teachers and experienced teachers engage in such collaboration most frequently” (OECD 2009: 122). In subject areas such as English where 73% of the registered teachers are female (General Teaching Council for Scotland (GTCS) 2010), there is the potential for greater practitioner representation in collaboration. In a subject such as physics, where only 26% of the registered teachers are female (GTCS 2010), fewer teachers may be represented in collaboration. Such gender differences in subject areas, considered in connection with these differences in participant representation, may affect the subject focus of school collaboration.

Schools participating in collaboration may not have the expertise, subject knowledge, leadership expertise or research skills needed for innovative initiatives or processes of collaborative inquiry. For example, schools with low attainment may be susceptible to staffing shortages and staff turnover which may result in strain on long-term staff members who are stretched to fulfil multiple roles. This suggests that the availability of competent facilitators participating in collaboration may vary. The chance of achieving equity in all areas and in all schools is jeopardised if the schools involved in collaboration lack the necessary expertise.

The use of collaboration to increase educational equity, especially in schools in disadvantaged areas, is fraught with challenges. The success of such a venture requires overcoming a multitude of potential barriers such as: staffing shortages, staff turnover, lack of expertise, skewed demographic of interested participants, pressure due to

accountability measures, competition, and conflicting agendas. It is clear that research is needed regarding the type of support required by schools embarking on such a journey.

Typologies of partnerships

A number of typologies have been created to judge the effectiveness of partnerships by identifying the attributes and types of support that enable a partnership to successfully attain specific outcomes. Existing typologies of partnerships include:

1. Smith and Wohlstetter's (2006) non-hierarchical typology emphasising the context-specific nature of school partnerships;
2. Chapman and Muijs' (2014) typology of school federations demonstrating the significance of the intended purpose of the typology;
3. Noam and Tillinger's (2004) description of an effective partnership's ability to create a new environment, an intermediary space in which to fulfil their purpose;
4. Barnett et al.'s typology (1999) emphasising the fluid and dynamic nature of partnerships by focusing on the changes encountered over time;
5. Stoll's grid/group matrix typology (1999) for mapping the dynamic nature of schools;
6. Salokangas and Chapman's (2012) suggestion that partnerships with high group/low grid have the ability to maximise the potential for professional learning.

Some typologies are in the form of lists, like a menu of options to choose from, for those interested in embarking on a school partnership. For example, Smith and Wohlstetter (2006) write, "The typology does not – implicitly or explicitly – advise leaders to seek one type of partnership over another, but rather provides insights into the different options available" (265). Similarly, Barnett et al. (1999) explain that it is left to potential partners to "consider which type of partnership is most appropriate ...for their situation" (34). These types of typologies allow for the consideration of context-specific needs by focusing on the uniqueness of each partnership's purpose and means of attaining that purpose.

There are other typologies that are created to judge the effectiveness of partnerships by identifying specific outcomes. Chavkin (1998) judges such evaluations:

We need to go further than just finding out if school, family, and community partnerships are helping education; we also need to know how, when, and which parts of the partnership are improving education (quoted by Noam and Tillinger 2004: 91).

An examination of the characteristics of partnership was undertaken by

Smith and Wohlstetter's (2006) in their typology based on *origin*, how the partnership was initiated; *content*, such as resources exchanged; *form*, informal or formal agreements; and *depth* of employee interaction. Smith and Wohlstetter suggest that "no one partnership type is inherently superior to the others, but rather context-specific to the partners' needs and assets" (2006: 265). They do not suggest that partnerships cannot be evaluated for effectiveness but do suggest that only the leaders of the partnership, perhaps because they have an intimate understanding of the goals and the context of the partnership, are qualified to place a value on its effectiveness. Non-hierarchical typologies and the context-specific nature of partnerships were emphasised throughout their research of public-private school partnerships. The diverse range of purposes and contexts of each partnership contrasts with other typologies that were used to evaluate the effectiveness of specific partnerships. The effectiveness of partnerships was evaluated by Chapman and Muijs (2014) using a typology of school federations. Their research suggests federations are more likely to improve student attainment outcomes if they begin with a goal to improve student attainment outcomes. These effective partnerships were part of "performance federations" involving the partnering of a "stronger" school with a "weaker" school. Partnerships such as these, with altruistic motivations, are similar to other effective partnerships with altruistic motivations mentioned by Salokangas and Chapman (2012) and Noam and Tillinger (2004). The research of Noam and Tillinger described effective partnerships as those in which "[t]he partners are typically far less preoccupied with their organisations than they are with the common good" (2004: 102). The combination of altruistic motivation and the ability to create a new environment, an intermediary space, reveal partnerships able to achieve their purpose. The intermediary space is defined as a space that is exterior to each of the existing systems from which the partners originate. When such a space exists the goals and purposes of the partnership are based on compromise and negotiation and a new environment is created. This research, although conducted in relation to after-school programs, can inform other partnerships in which intermediary environments are developed. For example, school partnerships between different local authorities are not owned by any one authority. These types of spaces, in which existing social orders become less defined or potentially even obsolete, can become uninhibited spaces of creativity and innovation. Noam and Tillinger (2004) describe four types of partnerships, all of which are defined by intermediary spaces. Three of the types (functional, collaborative, and interconnected) are outcomes-oriented partnerships. The fourth type, named transformational, is a dynamic and process-oriented

partnership in which “the organisation will always be transforming” (Noam and Tillinger 2004: 102).

Transformational partnerships are also found in the conceptual framework of Barnett and colleagues (1999). This conceptual framework is presented as a timeline in which two distinct entities may eventually transform into an interconnected entity or may progress to the extent that the two entities are dissolved and a new organisation is created. It is a typology based on partnerships between school systems and external resource agencies, emphasising the fluid and dynamic nature of partnerships by focusing on the changes encountered over time (Barnett et al. 1999).

Stoll also emphasises the continual transformation of schools arguing “that the rapidly accelerating pace of change makes standing still impossible” (1999: 14). Like individual schools themselves, school-to-school partnerships experience continual changes in staffing, funding, and leadership. Stoll’s typology is a grid/group matrix which classifies individual schools based on school culture, but it is also applicable to school partnerships experiencing constant change. The moment a school partnership is classified as a specific type of partnership, it may have changed into a new type. The grid/group matrix is especially appropriate for mapping these dynamic systems. It has on the horizontal axis a continuum ranging from improving to declining and on the vertical axis effective to ineffective. The four quadrants are labelled as moving, struggling, declining and sinking depending on their position along the axes. A fifth type, named strolling, straddles all four quadrants and is placed in the middle. This use of a dynamic grid/group matrix to describe school improvement is appropriate for typologies representing continuous rather than discrete characteristics.

Although some typologies consider only static representations of partnerships, most make mention of the constant change experienced by schools and school partnerships. Barnett et al. present their typology as a timeline and describe partnerships as a process:

First, partnerships should be viewed much like any innovation, as a process rather than a distinct event (Grobe, 1990; Hall and Hord, 1987). As members of the partnership learn more about one another and develop mutual trust, the structure and content of the partnership can change (Grobe, 1990) (Barnett et al. 1999: 15).

Using this process-oriented model of a partnership Barnett et al. (1999) present a typology of partnerships based on a continuous timeline in which a partnership may be moving in either direction. Similarly, the typology of Stoll (1999) suggests five quadrants based on

the type of motion demonstrated by the school. This dynamic nature of partnerships adds to the challenge of valuing partnerships as either effective or ineffective. For example, the moment a partnership is classified to be effective or ineffective the partnership may change enough to be judged otherwise. If an effective partnership is a dynamic partnership in motion, a typology that allows for this constant motion is required.

The third characteristic of effective partnerships mentioned in some of the typologies is the motivation of the partnership. Research into student networks by Maroulis and Gomez (2008) suggest it is insufficient to simply increase connectedness within a network especially if members of the network are resistant to working towards the intended purpose. Communication that circulates among members of a network must be conducive to the attainment of the network's purpose. The presence of non-redundant contacts and an agreed intended purpose suggests a delicate balance.

The methods used to evaluate the effectiveness of school-to-school collaboration in many of these studies relied mainly on teachers' interpersonal interactions or on an analysis of social capital in metaphorical terms (Maroulis and Gomez 2008: 1903). In contrast, the study by Daly and Finnigan (2016) captured the structure of the network using social network analysis. This approach to examining social capital is explained below by first considering the theoretical origins of social capital and social network analysis.

Social capital

Social capital theory can be applied to the sharing and transferring of knowledge within collaboration. The term social capital was first coined in 1916 by progressive educator, social reformer and Presbyterian, L. Judson Hanifan (Putnam 2002). At the time Hanifan was working in a West Virginian rural school system where he based his argument for the support of community meetings at rural schoolhouses on the concept of social capital:

In the use of the phrase social capital I make no reference to the usual acceptance of the term capital, except in a figurative sense. I do not refer to real estate, or to personal property or to cold cash, but rather to that in life which tends to make these tangible substances count for most in the daily lives of people: namely good will, fellowship, sympathy, and social intercourse among the individuals and family who make up a social unit....The individual is helpless socially, if left to himself....If he comes into contact with his neighbour, and they with other neighbours, there will be an accumulation of social capital, which may immediately satisfy his social needs and which may bear a social potentiality sufficient to the substantial improvement of living conditions in the whole community (Hanifan 1916 quoted by Putnam 2002: 2).

Hanifan alludes here to the benefits of accumulating social capital for the whole

community, not just the individual. The concept of social capital is especially relevant to schools in disadvantaged areas:

The basic idea of social capital is that a person's family, friends, and associates constitute an important asset, one that can be called on in a crisis, enjoyed for its own sake, and leveraged for material gain. What is true for individuals, moreover, also holds for groups. Those communities endowed with a diverse stock of social networks and civic associations are in a stronger position to confront poverty and vulnerability, resolve disputes, and take advantage of new opportunities (Woolcock and Narayan 2000 quoted by Putnam 2002: 5).

Increasing social capital in a community may result in positive outcomes, such as those listed above, or negative outcomes. Social capital can be beneficial to those who belong, increasing the advantage of a particular group while widening inequalities with those who don't belong (Putnam 2002). Social capital can also limit the situation of an individual by presenting obligations and expectations. Such norms of behaviour may constrain an individual, inhibit their access to additional resources, or affect changes to existing relationships. When some members of the community become gatekeepers or use their increased social capital for sinister gains negative outcomes result. Types of social capital can be categorised depending on whether or not the outcomes have a negative or positive impact on the community. Another way to differentiate is between formal and informal social capital. Within a school system there exists formal social capital according to the hierarchical positioning of teachers, principal teachers, headteachers, and local authority officers. At the same time there exists informal social capital among educational professionals who gather socially or for other informal purposes such as the sharing of resources.

A distinction can also be made between brokering and bonding which depends on whether participants share an affiliation such as belonging to the same school, local authority, race, class, religion, etc. For homogeneous groups bonding capital can be cultivated; whereas, among heterogeneous groups the climate is conducive to brokering. A teacher interacting with another teacher from the same affiliation group can initiate a flow of information or resources along the tie between them to develop bonding social capital. On the other hand, a teacher interacting with another teacher across a boundary can initiate a flow of ideas or resources by brokering across the boundary. Examples of boundaries may be geographic such as school or local authority boundaries, or affiliation boundaries such as gender, age, experience or position. In both bonding and brokering the flow of ideas along ties is not only dependent on the number of relations, but also on the position of each person or node (Burt 2001).

In an educational context, social capital is a means of describing:

... how the quantity and quality of interactions and social relationships among people affects their access to knowledge and information; their senses of expectation, obligation, and trust; and how far they are likely to adhere to the same norms or codes of behaviour (Hargreaves and Fullan 2012: 90).

The accumulation of social capital in school networks can be investigated by considering the degree to which educational professionals are able to access ties and relations (Penuel et al. 2009; Daly 2010). Both the social ties of the individual teachers, as well as the position of each node or structure of the network determine the network's effectiveness (Burt 1992; Burt 2001). Literature regarding the effectiveness of teacher networks draws on the notion that teacher knowledge, expertise and resources are embedded in social structures and social relations (Daly 2010; Moolenaar et al. 2011; Penuel et al. 2009). Teachers' collective ability to effect change is influenced by the type, quantity, and position of social ties held by each individual teacher. An examination of the flow of information along these relations or ties is possible using social network theory.

Social network theory

Social network theory is suitably applied to educational collaboration because it frames learning as a flow of information through network ties. Social network theory can help to identify "...what flows through those ties in the way of information, advice, problem solving, material resources, interpretation, and influence" (Daly 2010: xii). One of the strengths of this theory is its ability to illuminate "emergent social phenomena that have no existence at the level of the individual" (Muijs et al. 2011: 24). As a result, the autonomy of individuals is never absolute thus creating a scenario in which assessment of an individual's knowledge is partially an assessment of the individual's ties within the network. Using social network theory this interconnectedness can be analysed by examining the ties within a network. This theory can reveal characteristics of effective collaboration; however, it does have limitations. One of the limitations is its inability to "capture detail on incommensurate yet meaningful relationships" (Ball and Junemann 2012: 13). Daly suggests other disadvantages include the fact that "one cannot be certain whether or not a respondent-centred network study actually reflects the social interactions" (2010: 244). For these reasons, other data such as interview data, ethnographic data, archive records, or email flow information should be triangulated with social network data (Daly 2010; Ball and Junemann 2012). Despite these limitations, social network theory

contributes a framework with which to examine the potential for network structures to foster the creation of social capital (Burt 2001).

Creation of social capital

Ronald Burt argues that ties outside one's network that involve the brokering of connections between otherwise disconnected segments create social capital (Burt 2001: 31). For example, teachers whose relationships form bridges between educational professionals who are separated by geographic or other boundaries have the opportunity to broker the flow of information and "have a greater diversity of information and a greater freedom to act." (Maroulis and Gomez 2008: 1906). Some nodes have multiple connections within a network, whereas other nodes may have more connections outside the network. A teacher or group with many ties within their network will tend to receive a greater flow of ideas than a teacher or group with fewer ties within the network, but much of the information will be redundant (Burt 2001). A node with fewer ties within its own network, but more ties to outside networks will have access to non-redundant information.

Networks of low density tend to have more actors positioned at the boundaries of the network creating opportunities for the brokering of structural holes. Network density refers to the number of ties within the network compared to the total possible number of ties. From a social network analysis perspective, redundant resources flow within dense networks due to the multiple ties connecting each node. This type of network, demonstrating high density, reports feelings of security and trust among members (Moolenaar and Slegers 2010). High density networks tend to be cohesive networks in which actors may share perspectives and support one another. In these types of dense networks it is easier to enforce norms of conduct (Burt 2001). Social cohesion, however, can also have a negative effect. For example, there may be less "diversity of information that enters a group, as well as one's freedom to pursue ideas outside the norms of the group" (Maroulis and Gomez 2008: 1906). This type of closed network circulates redundant information more freely:

A generic research finding in sociology and social psychology is that information circulates more within than between groups-within a work group more than between groups, within a division more than between divisions, within an industry more than between industries (Burt 2001: 34).

However, low density can also be advantageous for networks that "span multiple communities of practice ...give people the ability to convey complex ideas to diverse audiences" (Reagans and McEvily 2003: 242).

An actor who is in a position to connect disconnected others is in a specialised network position known as a structural hole (Burt 1992). The advantages of being in this brokering position include opportunities to acquire, pass on, censor or control non-redundant information. Brokering refers to the benefits afforded to actors and to networks when ties connect two otherwise disconnected spaces.

Structural holes

Disconnected spaces defined by Reagans and McEvily (2003) as structural holes created by the absence of strong third-party ties between individuals provide specialised communication channels that tend to introduce non-redundant information into a network. Research has revealed that most “[p]eople focus on activities inside their own group, which creates holes in the information flow between groups, or more simply, structural holes” (Burt 2004: 353). By introducing information ‘from the outside’ brokers can disrupt the cohesion of the original group, potentially disrupting hierarchies and levels of trust, but also introducing innovative ideas. Those who are acting as brokers are not dependent on others to pass or restrict information since they are, themselves, in positions to pass or restrict information, particularly new and innovative ideas. A network of school partnerships may involve multiple school groups as well as local authority groups. Between these groups there may exist disconnected segments creating the potential for brokering across structural holes. Brokers operating across these structural holes have the potential to contribute positively to the network, but also the potential to become gatekeepers who “filter, distort, or hoard resources” (Daly and Finnigan 2011: 47) or exercise control (Burt 2001). The potential for positive contributions is emphasized by Noam and Tillinger (2004) in their research regarding school partnerships between schools and afterschool programmes in the United States. Noam and Tillinger’s research does not use the term ‘structural hole’, but instead makes reference to intermediary spaces. The overlap between the concepts of structural holes and intermediary spaces is discussed below.

Intermediary spaces

An intermediary space is described as a newly created space which exists outside of previously existing spaces. For example, school partnerships that cross local authority boundaries create spaces in which each local authority’s hierarchical chain of command is

confused, thereby introducing an intermediary space. These intermediary spaces derive their identity from being non-bureaucratic, less fragile and more protected:

...leadership has also created an intermediary setting that was innovative and less fragile than many other programs. Staff felt protected from the everyday political problems of many other programs (Noam and Tillinger 2004: 104).

The suggestion that a non-bureaucratic intermediary space might be conducive to both the promotion of innovation, but also protection from everyday political problems presents a contrast. The intermediate spaces or structural holes are described as places of new power structures and new knowledge construction, but there is also a suggestion of protection. In addition to protection, the significance of trust is mentioned in the following quote:

The network brokers are more familiar with the diversity of surrounding opinion and behavior, so they are more likely to detect productive new combinations of previously segregated information, more likely to identify alternative sets of people whose interests would be served if the new combination were brought to fruition, and more likely to be able to frame their proposals in a way that appeals to target audiences...However, there is an element of trust required to accept a proposed new idea or way of thinking. People have to see the broker as a credible, legitimate source (Burt and Merluzzi 2016: 3).

Interestingly, both trust and network brokers are mentioned here despite the contrasting structures required to host each of them. The exchange of non-redundant information by network brokers tends to be more prevalent in networks of low density in which more actors are positioned at the boundaries of the network; whereas, the presence of trust implies a dense network with many internal ties where information travels faster, and communication channels are more reliable (Burt 2001). What type of network structure is able to support both of these conditions concurrently? The literature suggests two possibilities: multiple overlapping networks existing simultaneously (Smedlund 2008); or networks in constant motion oscillating between a state of brokerage across structural holes and a state of network closure (Burt and Merluzzi 2014).

Multiple overlapping networks existing simultaneously

According to Smedlund's research regarding the network structures of innovative firms a network with many weak ties and structural holes creates the context for knowledge which is "emergent, potential and in a not-as-yet invented form" (2008: 72). Smedlund argues different network structures may exist for different types of knowledge such that another type of knowledge is "well-specified, explicit knowledge to improve efficiency" (2008: 66) which is knowledge best implemented in a network where a focal actor has ties to every other actor. This type of structure has explicit rules, enforced sanctions, and

hierarchical relations. Despite the distinct differences between these network structures it is clear that both types of knowledge are needed for the effective functioning of an innovative network. It is for this reason that Smedlund insists that it is possible to have multiple overlapping networks existing simultaneously within an organization:

...everyone in the firm can be a member of every type of social network. These networks also include members from outside the firm. This means that individuals must simultaneously deal with inter-firm and extra-firm relationships that are related to the efficient use of codified knowledge, the gradual development of experience-based knowledge and the handling of potential, not-as-yet invented knowledge (2008: 72).

This suggests that members of the organisation are simultaneously involved in different network structures. The need for different types of network structures for the purpose of fostering different types of knowledge transfer is also mentioned by Burt and Merluzzi (2016), however, they propose a different means of allowing for involvement in different network structures.

Network oscillation

Burt and Merluzzi (2016) suggest that networks are in constant motion oscillating between different structures. Network oscillation refers to “a period of deep engagement in a group, followed by a period of brokering across groups, followed by deep engagement, followed by brokering, and so on” (Burt and Merluzzi 2016). The research of Collins and Hansen (2011) also revealed innovation on its own does not guarantee success, but that organisations must balance innovation with discipline. This idea of a balance lends itself to the concept of oscillating between two distinct positions.

For a partnership to be capable of both transferring existing knowledge, and also generating new and innovative knowledge, different structures may be required. A fast and efficient flow of existing knowledge within the network may indicate redundant resources. On the other hand, a network with numerous opportunities for brokering might regularly have innovative ideas introduced into the group, but if the group does not have sufficient network closure the group may not be cohesive enough to act upon the new ideas:

Brokerage across structural holes is the source of value added, but closure can be critical to realising the value buried in structural holes (Burt 2001: 31).

Burt further explains there are at least two necessary conditions:

Performance is highest...where in-group closure is high (one clear leader, or a dense network connecting people in the group) and there are many non-redundant

contacts beyond the group (member networks into the surrounding organisation are rich in disconnected perspectives, skills, and resources) (2001: 49).

Penuel et al. (2009) provide further evidence in their research in schools. They found that a principal of a school acting as a broker by bridging a structural hole and introducing new ideas and resources into a school may not be successful unless the staff network structure allows new ideas to be “vetted and adapted through collegial interaction” (Penuel et al. 2009: 156). This implies that the effectiveness of structural hole bridging by a school principal is dependent upon a degree of trust and network closure among the teachers.

Conditions and structures for effective collaboration

To establish and maintain a balance between network closure and structural hole brokering actors in the network may require opportunities to oscillate between positions of structural hole brokering and positions of network closure (Burt and Merluzzi 2016; Carnabuci and Bruggeman 2009). Research by Carnabuci and Bruggeman (2009) regarding types of knowledge in patent production networks compared the conditions required for the accumulation of innovative knowledge compared to specialised knowledge. In networks demonstrating efficacy in knowledge accumulation they found neither evidence of closure nor of brokerage. Over five years of data from the United States Patent and Trademark Office were used. The data, in the form of patent classes, included more than 2 million patented inventions and their citations. The data were used to compare knowledge accumulation. The accumulation of knowledge did not indicate either closure or brokerage in their comparisons of innovative knowledge and specialised knowledge, but rather an averaging out, leading them to speculate that oscillation between these two states may be taking place (Carnabuci and Bruggeman 2009).

A network in which nodes are continually oscillating between the most beneficial positions might be able to maximise the social capital available (Burt and Merluzzi 2016). To examine the potential for social capital to aid or inhibit educational change, social network analysis has been applied in a number of recent studies (Daly and Finnigan 2011; Daly et al. 2014; Rodway 2015).

Social network analysis

The flow of ideas and information within organisations and across the boundaries of organisations can be studied by focusing on characteristics of the ties of the actors. These characteristics can be quantified by taking measurements such as density, centrality,

external-internal index or betweenness, etc. To measure the brokering opportunities of a particular node the Freeman betweenness or group external-internal index can be calculated. These measurements are described in the methodology chapter.

Limitations of social capital theory and social network theory

A limitation of these theories is the inability of a network representation to reveal both the network and the controlling force(s) beyond the network (Gulson et al. 2017). The invisibility of forces which cannot be mapped applies to work focused on the amelioration of education inequity. Current measures of school inequity are usually based on individualistic measures of success and improvement underpinned by competitive and economic models of educational success. For example:

[A] teacher's ability to 'add value' is a very individualistic undertaking determined almost exclusively by the human capital, or training, knowledge, and skills, of the individual teacher and the demographics of the student (Daly, 2015: 3).

Instead, education should be considered both a collegial activity (Fielding 1999) and "an intellectual entitlement and a preparation for individual empowerment" (Kelly 2007: 2). There is a need for a reconciliation of this tension between individualistic goals and the development of social capital as a means of developing cohesive communities with shared goals and collective capabilities. The sources of these competitive and individualistic forces are not visible in network visualisations and yet they impact the development of positive social ties. A focus on building positive social ties has been encouraged as a means of tackling the inequity in the face of failed attempts reliant on traditional economic remedies and financial aid. Not only have economic strategies proved inadequate, they have been shown to disrupt social harmony and create new vulnerabilities (Chestnutt and Chapman 2017). As an alternative to economic solutions to the problems of socio-economic disadvantage and educational inequity, schools are increasingly being asked to provide innovative solutions using resource networks and incorporating ingenuity. Despite the potential to access solutions via these means, there is an inherent conflict between the development of social capital and assumptions regarding the overarching purposes of education when these purposes are evaluated using narrow, individualistic or competitive means.

A research approach utilising social network analysis has been applied to study social networks and collaboration within schools and within school systems (e.g., Daly and Finnigan 2010, 2011).

Social capital development is a means of developing cohesive communities with shared goals and collective capabilities yet current measures of school success and improvement are based on individualistic endeavours to “schooling as a preparation for employment through a curriculum driven by economic imperatives” (Kelly 2007: 2). Assessment ideologies are based on competitive and economic models of educational success. A possible means of reconciling this tension is by combining social capital with the capability approach. Social capital and the capability approach appear together as complementary approaches in the research literature regarding management studies (Ansari et al. 2012). By adopting both Amartya Sen’s capability approach and an examination of social capital the values, freedoms, and educational needs of both individuals and communities are recognised. Social capital is a mechanism for transmitting not just resources, but capabilities at both the individual and the community level. Social conversion factors facilitate the collective enjoyment of opportunities by individuals socially embedded in their social environment. The capability approach acknowledges both the importance of social relations and the importance of diversity such “that different people, cultures and societies may have different values and aspirations” (Clark 2006: 5). By acknowledging and drawing attention to group disparities the capability approach proposes an approach for tackling inequity which engages disadvantaged communities as partners rather than producers or consumers of policy and change. Evaluation in this context is conducted on the basis of:

...whether it advances capability transfer, diffusion and retention by (a) enhancing the social capital between a particular community and other more resource rich networks, and (b) preserving the existing social capital in the community (Ansari et al. 2012: 815).

A community’s dependency on the enhancing and preserving of social capital for the development of capabilities suggests collective rather individualistic motivations for collaboration.

Chapter summary

School collaboration can provide the necessary conditions for the creation of social capital to support knowledge construction for the purpose of providing equitable opportunities for flourishing. Existing research suggests effective collaboration is a dynamic process

involving movement between closure and structural holes; the development of a collective purpose and the use of proven methods of collaboration between schools such as collaborative inquiry and lesson study. There are many barriers preventing successful collaboration in schools in disadvantaged areas requiring additional support and research.

Chapter Five: Methods

This study examined factors that contributed to a partnership's ability to promote achievement in disadvantaged areas. According to the literature, effective collaboration demands school partnerships that are dynamically oscillating between different structures and different types of knowledge. These dynamic partnerships have the potential to pursue a common purpose such as the tackling of educational inequity. Stagnant partnerships that retain a consistent network structure and do not exchange or generate diverse types of knowledge do not appear to be as effective. The expansion and generalisation of the theories underpinning these themes as they apply to school partnerships can be accomplished using a research strategy applicable to the research aim and research questions. This chapter begins by positioning this study within a suitable paradigm before providing a rationale for the research strategy and methods. After outlining the research strategy, the chapter provides details of the methods used for the collection and analysis of data.

Paradigms

The positioning of this study within a suitable paradigm involved an examination of the common paradigms used in educational research followed by an exploration of the characteristics of each paradigm, and then a search for documented examples of educational research from the perspective of each paradigm. The final phase involved considering which of these paradigms was most applicable to this study. Before exploring specific examples of paradigms within educational research the concept of paradigm is defined.

A paradigm is a worldview or set of assumptions and beliefs guiding a researcher. Methods used in educational research are influenced by a researcher's assumptions and beliefs. These assumptions and beliefs can be divided into assumptions about social reality (ontology), how we come to know (epistemology), the nature of values and worth (axiology), and the research methods. When these four elements all fit coherently together they form a paradigm (Heron and Reason 1997). Six paradigms have been explained below. The first, positivism, has been included as a means of providing a historical introduction to the other five paradigms. The remaining paradigms were chosen as examples of paradigms used in educational research.

The paradigm that dominated science for a time was a philosophy which came to be known in the nineteenth century after the term positive was used by Auguste Comte in the title of his philosophical treatise. Since then positivism has been defined in different ways, but it has consistently been associated with the use of the scientific method. The scientific method assumes objective knowledge and value-free universal causal laws can be obtained from direct experience or observation (Robson 2002). This positivist perspective assumes reality, in the form of constant relationships between events or variables, can both be known and verified by a researcher (Robson 2002). The search for constant relationships, however, becomes less straightforward in the world of social science due to the following issues:

- The characteristics and perspective of the observer have an effect on what is being observed (Robson 2002);
- The observers are “part of the ongoing action being investigated” (Cohen et al. 2007: 19);
- Science as socially constructed is not value free (Robson 2002: 26);
- There are limitations to what scientists can observe and measure such as limitations to observing and measuring emotions and thoughts (Trochim 2006 referenced by Robson 2002).

It is for these reasons that the use of positivism has been quantitate in the social sciences. It is clear that human quantita is not “governed by general, universal laws and quantitate72ed by underlying regularities” (Cohen et al. 2007: 19). According to Teddlie and Reynolds (2001) the outdated tenets of positivism have been replaced within the field of Educational Effectiveness Research (EER) with post-positivism while maintaining the primarily quantitative methodology.

Post-positivism is underpinned by a critical realist ontology such that:

Theoretical entities are not hypothetical, but real; observations are not the rock bottom of science, but are tenuous and always subject to reinterpretation (Manicas and Secord 1993 quoted by Robson 2002: 34).

This type of realism is critical of the social practices being studied (Robson 2002) and provides an impetus for change (Bhaskar 1986 referenced by Robson 2002). Another defining characteristic of critical realism is the integration of subjectivist and objectivist approaches (Robson 2002). The objectivist approach, when applied to the social sciences,

“sees knowledge as a social and historical product that can be specific to a particular time, culture or situation” (Robson 2002: 34). On the other hand, the subjectivist approach sees knowledge as “a human construction, that it is a product of the human mind” (Biesta and Burbules 2003: 11). The post-positive integration of these two approaches results in a modified objectivist epistemology in which objective reality cannot be known for sure due to influences such as the influence of the researcher:

There is an acceptance by post-positivists that the theories, hypotheses, background knowledge and values of the researcher can influence that which is observed (Reichert and Rallis 1994 quoted by Robson 2002: 27).

The combination of a modified objectivist epistemology and critical realist ontology leads to the employment of primarily quantitative methods, but can also draw on qualitative methods to reduce bias and provide triangulation (Nakray 2015).

There are several other paradigms that share a variation of the realist ontology, but do not share the modified objective epistemology of post-positivism. For example, critical theory is underpinned by a realist ontology, but not an objectivist epistemology.

Like post-positivism, critical theory is also underpinned by a form of realism, but one in which reality is understood as a historical construct. Historical realism assumes “knowledge is mediated reflectively through the perspective of the researcher” (Nakray 2015: 18). This assumption leads to methods which focus on “investigator/participant dialogue, uncovering subjugated knowledge and linking it to social critique” (Nakray 2015: 18). Critical theory can be used to “make links between educational ‘inside’ and ‘outside,’ between past, present and future, and between research design and larger social meanings” (Anyon 2009: 3).

There are a number of interpretations of critical theory. Some interpretations are particularly applicable to educational research. The combination of a focus on the construction of meaning through social interactions along with a focus on institutions and cultural constructions quantified the approach of critical interpretivism. Bourdieu’s theory of social reproduction is often associated with this approach since his theory assumes a critical theory stance while refusing to take sides with either structuralists or individualists. “Bourdieu’s approach suggests that we cannot understand or analyse a social phenomenon in its own substantial terms, but rather we need to situate it relationally within the fields it sits in.” (Lingard 2015: 176). Various interpretations of Bourdieu’s

work on capital, fields, habitus, reproduction, and reflexivity have resulted in educational research methods using both quantitative and qualitative methods.

Despite this paradigm's flexibility in terms of possible research methods or possible research questions, there are constraints due to the assumed ontology of historical realism. The following paradigm, unlike critical theory, does not prescribe a set ontology.

Pragmatism allows for flexibility in the ontological and epistemological assumptions due to the fact that the research questions determine the choice of ontology and epistemology rather than the other way around. The pragmatist accepts the existence of an external reality, but by critically observing social practices plausible explanations are chosen based on an approach's ability to produce anticipated or desired outcomes (Cherryholmes 1992). Real world problems are considered by asking 'what works, for whom, and under what circumstances?' while making a distinction between 'what worked' and 'what might work in the future' (Harris et al. 2013). This relationship between utility and truth, and data and theory, provides a great deal of flexibility. While a deductive approach begins with theory and uses the theory to interrogate data, and an inductive approach begins with data and uses it to develop grounded theory, pragmatism suggests a third possibility, an abductive approach:

Working simultaneously deductively and inductively to and fro from data or oscillating between theory in the clouds and data on the ground in Weis and Fine's terms. In its classic usage by the pragmatist philosopher C.S. Peirce, abduction is also seen as a way to generate hypotheses and tentative explanations around specific instances or occurrences (Lingard 2015: 187-188).

Rather than being limited to a dichotomy in which truth and utility are two separate entities, truth is found in utility. Similarly, rather than being limited to objectivism or subjectivism, the pragmatism of Dewey proposes transactional realism as an alternative:

Although Dewey's transactional realism does assert that knowledge is a construction, it is not a construction of the human mind, but a construction that is located in the organism-environment transaction itself. What is constructed –over and over again– is the dynamic balance of organism and environment... (Biesta and Burbules 2003: 11).

This construction of knowledge through interactions suggests an emphasis on social interactions. The emphasis on interactions is also demonstrated in Dewey's choice of humanism over relativism or absolutism. Dewey's humanism proposes that "we are fully human only in and through our cooperation, communication, and common, democratic deliberation with others" (Biesta and Burbules 2003).

Dewey's humanist transactional realism, however, does not necessarily fit neatly with Peirce's pragmatism. The pragmatism of Dewey and the pragmatism of Peirce are not the same. Similarly, there are several other forms of pragmatism and neo-pragmatism. In each variant, both quantitative and qualitative methods can be used depending on the research questions. The main constraint within this paradigm is the limited types of research questions which are applicable. Educational research from a pragmatist approach requires an underlying optimism about what is achievable, possible and desirable.

This paradigm values insider knowledge to the extent that the distinction between the knowledge of the researcher, the researched, and the collective mind becomes indistinguishable. The employment of a participatory strategy suggests an acceptance of the blurring of perspectives such that the roles of the researcher and the researched become shared. The methods employed for participatory research include a wide array due to the fact that the methods are chosen for their efficacy to foster social, cultural or political change. Aspects of participatory research may resemble action research, but with a clear distinction:

...it does not assume that the contribution of researchers to this process is prior to that of practitioners. In other words, researchers do not design practices that are then implemented by practitioners (Muijs et al. 2010: 87).

There is, however, the potential for knowledge to be transferred to participants, policy makers and communities.

So far all of the mentioned paradigms can be approached from a realist ontology. In contrast to the ontology of the interpretive and constructivist paradigms there is a relativist ontology that differs significantly in its underlying assumptions about reality. A relativist ontology assumes truth is a construct which can exist in the form of multiple meanings. Researchers and participants construct knowledge together. The relativist ontology does not accord scientific accounts a privileged position for their explanatory or predictive value, but instead values descriptions (Robson 2002).

Paradigm choices and educational effectiveness research (EER)

Within the field of EER, the provision of effective education is of primary concern, but often from very different paradigmatic and methodological approaches. Disagreement regarding the ontological, epistemological and methodological assumptions underpinning EE research has fueled a lengthy (and sometimes unsavoury) debate within the field

(Gorard 2011; Reynolds 2012; Slee, Weiner and Tomlinson 1998; Teddlie and Reynolds 2001; Thrupp 1999; Willmott 1999). Rather than dismissing this conflict as a distraction, it has resulted in a number of publications, some of which offer insight into the paradigmatic approaches adopted by EE researchers. Teddlie and Reynolds (2001) identify themselves as pragmatists, while Slee, Weiner and Tomlinson (1998) and Thrupp (1999) are identified as critical theorists. The following two sections outline the perspectives of the pragmatists and the critical theorists.

The pragmatists have defended their position as researchers with an optimistic outlook regarding the ability of classroom practices, schools, and school systems to change, including those schools in disadvantaged areas (Teddlie and Reynolds 2001). It is an optimism that is confined to changes within schools and school systems due to the belief that altering the current social order is an unreasonable and unattainable pursuit. This paradigm is quantified by assumptions about the constraints of society and a “research agenda aimed at changing schools as they currently exist” (Teddlie and Reynolds 2001: 76). Operating within the constraints of social and cultural influences, research from the pragmatists has provided empirical evidence of positive change without interventions such as redistribution policies (Teddlie and Reynolds 2001). Empirical evidence has been developed in part due to the use of increasingly sophisticated quantitative methods. Despite the optimistic evidence of positive change within schools and systems, there continues to be evidence of the enduring negative impact of problems outside these systems.

In contrast to the position of the pragmatists, the critical theorists have presented their position as researchers with a passion for exposing the relationships between social and political contexts and educational effectiveness (Riddell et al. 1998; Thrupp 1999). In addition to critiquing class structures, social theorists have endeavoured to provide a critical perspective of the influence of research on educational policy (Slee, Weiner and Tomlinson 1998). When student achievement is understood to be linked to deprivation, the pursuit of improved educational achievement requires an examination and illumination of the causes of deprivation. The provision of a critical perspective involves the gathering of data suitable for the generation of theory, an exposition of the uses and abuses of power, and an exposition of alternative voices through the use of participative methods (Hadfield and Chapman 2016). The role of exposing and revealing important and influential

perspectives of the structures beyond the boundaries of school systems is a contrasting, yet complimentary role to that of the pragmatists.

Examples of EE research using various methodological approaches are discussed below and then evaluated based on their applicability to this study:

- A **participatory approach** to research regarding school collaboration was used by Ainscow (2012b). This study of Improving the Quality of Education for All (IQEA) provided opportunities for the blending of research knowledge and practitioner knowledge (Reynolds et al. 1993).
- A **critical interpretivist approach** to EER was used by Coldron et al. (2014) in research regarding the establishing of alliances between schools and the building of social capital. This qualitative approach was informed by Bourdieu and produced an examination of the forms of capital, power, and conflict within 15 schools in three local authorities. The critical interpretivist approach was a suitable approach for bridging the gap between the micro and the macro issues and between pragmatic and theoretical issues.
- A **critical theory** approach was used for a theoretical study of the role of community-oriented schools in England. This study concluded “a more wide-ranging strategy is needed in which educational reform is linked to other forms of social and economic reform” (Dyson and Raffo 2007: 297). The focus of this paper was the use of literature to expose the influence of social and economic structures. The historical realist and structuralist approach of this research suggested a critical theory paradigm.
- A **pragmatic approach** was used in a study of High Reliability Schools (Reynolds 2012) by seeking to illuminate the concepts and systems that worked for secondary schools endeavouring to become intelligent organisations.

Choice of paradigm for this study

The aim of this study is to illuminate the processes and factors which foster the development of effective school partnerships for the purpose of tackling educational inequity. Included within this aim are three different pursuits: an understanding of the

tackling of educational inequity; an understanding of the structures and characteristics of effective partnerships; and the evaluation of the impact of partnerships on pupil achievement. The diversity and complexity of the issues inherent in these three components suggest a number of possible paradigms. For example, an understanding of educational inequity could be approached from a critical theory perspective; partnership structures from a constructivist approach; and the verification of objective knowledge (pupil achievement) could be approached from a post-positivist approach. Furthermore, due to the researcher's involvement as a university team member involved in the process of collaborative inquiry I not only observed the generation, creation, and exchange of knowledge within the partnerships, but was also a participant in these processes. This suggests the potential for adopting a participatory paradigm. I have chosen, however, to reconcile the varying and diverse components using a single paradigm which can include a study of the social interactions and human behaviours influencing the participants, structures, forces, and powers present in all three of the research questions. Pragmatism is able to accommodate an examination of the interactions among educational professionals, as well as the interactions between policy and practice, and between concepts such as teacher identity and pupil inequity. The choice of a pragmatist approach does not suggest that a critical approach could not have been an equally useful approach. There are both disadvantages and advantages of choosing pragmatism over critical theory. A critical theory approach would have provided the opportunity to examine the role of economic and political structures in the furthering of equity by drawing on the insightful work of Picketty (2014) and other contemporary thinkers. The choice of a pragmatist approach, while excluding these opportunities, still allows for an examination of the influences of social services, parents, policy-makers, politicians and school system structures. A consideration of these beyond-school factors can be accommodated from a pragmatist perspective, but only by following these pragmatist guidelines: science, in the form of quantitative methods is not privileged over other methods but seen as complimentary; truth is considered in relation to the usefulness of the findings for the practitioners involved in the study; and the wider goal of this inquiry pertains to the equitable and democratic inclusion of pupils within their communities.

	Ontology	Epistemology	Methodology	Research examples from field of EER	Aspects of the paradigm most applicable to this study
Positivism	Realism	Objectivist	Quantitative	Rutter et al. 1979 (claimed causal relationship between school process and pupil progress)	The positivist approach it is not applicable to this study because this study focuses primarily on social interactions between educational professionals.
Post-positivism	Critical realism	Modified objectivist	Can include both quantitative and qualitative	Creemers 1994; Mortimore et al. 1988; Bosker & Witziers 1996	A post-positivist approach is applicable to one aspect of this study: the evaluation of the effect of different types of partnerships on school level pupil achievement in mathematics and literacy (Applies to research question 3); however, there are other paradigms that are applicable to all aspects of this study rather than just one component.
Pragmatism	The choice of ontology is based on the research problem. (Reality and truth dependent on what works in a particular situation.)	Reconciles different viewpoints through pluralistic means	Can include both quantitative and qualitative	Federation of academy chains (Chapman 2015); High Reliability Schools (Reynolds 2012; Reynolds et al. 1993)	A focus on the circumstances of each partnership that allowed participants to generate, create, and exchange knowledge and understanding indicates a pragmatic emphasis on what worked, for whom, and under what circumstances. (Applies to research questions 1,2) This flexibility of this approach can accommodate the evaluation of the effect of partnerships on school level pupil achievement in mathematics and literacy using quantitative methods. (Applies to research question 3)
Critical theory		Historical realism	Can include both quantitative and qualitative	Dyson and Raffo 2007; Robson 2002	A critical theory approach is applicable to questions regarding inequity and the influence of factors both within and beyond the bounds of the partnership. Questions such as which interactions, power issues, policies, and societal structures prevent partnerships from having an impact? Where does the influence of the partnership begin and end? (Applies to research questions 1,2) Specific strands of critical theory such as critical interpretivism can also accommodate the evaluation of the effect of partnerships on pupil achievement using quantitative methods. (Applies to research question 3)
Participatory	Can include critical realism among others	Insider knowledge highly valued	Can include both quantitative and qualitative	IQEA (Ainscow 2012a); Manchester Challenge (Ainscow 2012b)	The researcher was involved as a participant in the school partnerships being studied. As a university team member involved in the process of collaborative inquiry the researcher not only observed the generation, creation, and exchange of knowledge within the partnerships, but also participated in this. (Applies to research questions 1,2)
Interpretive/Constructivist	Relativist	Researcher and participants construct knowledge	Qualitative	Coldron et al. (2014)	Aspects of this paradigm can be applied as the researcher collected information in the form of actors' accounts / constructed reality and descriptions regarding their activity and networks etc. The researcher has co-constructed accounts with participants.

Table 8: Paradigms

Research design

The choice of the pragmatist paradigm suggests that the process of designing the research strategy is dependent upon the research questions. Each of the research questions of this study has a different but complimentary focus which may be more suited to quantitative methods or qualitative methods. It is for this reason that a mixed methods design has been chosen. The components of the design process are outlined by Robson (2002) as the following:

<i>Purpose(s):</i>	What is this study trying to achieve?
<i>Theory:</i>	What theory will guide or inform the study?
<i>Research questions:</i>	To what questions is the research geared to providing answers?
<i>Methods:</i>	What specific techniques (e.g. semi-structured interviews, participant observations) will be used to collect data?
<i>Sampling strategy:</i>	From whom will data be sought? Where and when?

(adapted from Robson 2002: 81)

Each of these components is planned, but then revisited and refined or modified depending on the development of different aspects of the study (Robson 2002). Research with an exploratory purpose often has a qualitative strategy, while research with descriptive and explanatory studies often have quantitative strategies (Robson 2002). Research questions asking ‘How?’ or ‘Why?’ are often approached using qualitative strategies; whereas, ‘What?’, ‘Who?’ and ‘Where?’ questions are more likely to use quantitative strategies (Robson 2002). The context, including the amount of control the researcher has over the situation, also influences the choice of strategy. Quantitative strategies require a degree of control; whereas, qualitative strategies are more conducive to contexts requiring less control by the researcher.

A mixed methods research design might employ either the quantitative or qualitative methods first depending on the rationale for using each approach. Possible reasons for employing quantitative methods before qualitative methods include the establishment of relationships between variables before developing explanations for the relationships; the selection of participants; or the provision of initial results before using qualitative methods as a means of checking (Robson 2002). Employing quantitative methods before qualitative methods is commonly used in SNA studies where quantitative descriptions of network structures are later validated using qualitative methods. In other studies, using qualitative methods first may provide contextual information useful to the planning of the quantitative methods. By sandwiching quantitative methods between qualitative methods,

the latter can be used to both inform and check the quantitative data. For this study SNA data were collected and used to inform the selection of participants and the design of the interview schedules. Qualitative methods in the form of interviews (and focus groups) were then used to provide explanations, insight into processes, participants' perspectives, and triangulation (Robson 2002). Alternating between the two approaches allowed for the various methods to inform and complement one another. The analysis of the data was done iteratively such that a small portion of the SNA analysis was completed, then a portion of the qualitative analysis, then questionnaire analysis, then SNA analysis, etc. This was intentional to allow each part of the analysis to inform and complement the other.

Rationale for research design

The purpose of the study was to interpret, rather than generalise, the behaviours of educational professionals and pupils during a school partnership initiative and show how these behaviours influenced or revealed the development of more equitable education. An alternative approach could have incorporated quantitative data to demonstrate to what degree each pupil experienced equity. However, the aim of the research was not to measure the extent of equity, but to identify the key factors and processes affecting the effectiveness of school partnerships and educational equity.

This research regarding school partnerships “investigates a contemporary phenomenon within its real-life context” (Yin 1994: 9). It is a research context dense with variables of interest over which the researcher has no control. Within this context the research seeks to ask how and why questions about school collaboration and about teachers doing research. One way in which to address these questions is to compare the empirical results to previously developed theory. A case study approach can be used in this situation by showing that two or more cases support the same theory, but do not support a rival theory (Yin 1994). The number of cases required to demonstrate a theoretical replication is dependent upon the overall scope of the inquiry (Yin 1994). A multiple case study is beneficial to the purposes of this study since each case can be selected to demonstrate a different network size and structure. One of the partnerships spans two local authorities and the other is confined to a single local authority. The theoretical framework suggests that each of the cases will produce contrasting results.

Mixed methods research design

There are both disadvantages and advantages of a mixed methods design. One disadvantage of a mixed methods design is the additional time required compared to a design that includes only qualitative methods or only quantitative methods. The opportunity to use multiple methods and sources contributes to triangulation. It not only affords the flexibility to address quantitative questions such as the measurement of pupil achievement or the measurement of network density, but also address qualitative questions regarding teacher network processes. There is limited previous work regarding school partnerships, their structures, and the tackling of inequity; therefore, it is beneficial to include “an initial flexible design stage of primarily exploratory purpose” (Robson 2002: 97).

The number of specific, yet flexible, research questions introduced some level of structure into the methods rather than an unstructured and completely ‘grounded’ approach (Glaser and Strauss 1967 referenced by Robson 2002). This research, therefore, adopted an iterative approach that allowed the data and emerging themes to inform and refine the collection of data, analysis and theoretical concepts.

Quantitative methods are defined by the use of measured or numerical data as evidence to support an argument or theory. Causality is demonstrated using variables that may have a direct or indirect effect on others (Robson 2002). Quantitative designs may be categorised as true experimental, single case experimental, quasi-experimental and non-experimental. Non-experimental fixed designs lack an active manipulation of the situation by the researcher.” (Robson 2002: 97). This is the approach that was taken with the quantitative SNA methods of this study.

Qualitative methods result in data that are usually in the form of words (Robson 2002) and related to social phenomenon such as “the environment; people and their relationships; behaviour, actions and activities; verbal behaviour; psychological stances; histories; physical objects” (Baker 1994 cited by Cohen et al. 2007: 169). Observations of these social phenomena are used to illuminate processes and factors such as those fostering the development of resilient school partnerships. The utility of qualitative research is often a subtle or indirect effect on decision-making processes as a result of generating “a range of different types of knowledge – concepts, propositions, explanations, theories, strategies, evidence, methodologies” (Caplan 1991 cited by Cohen et al. 2007: 46).

Triangulation is “a method of finding out where something is by getting a fix on it from two or more places” (Robson 2002: 371). According to Denzin (1988), the different types of triangulation can be divided into data triangulation, observer triangulation, methodological triangulation, and theory triangulation. Methodological and data triangulation will be used in this study since both qualitative and quantitative methods will be employed through the use of questionnaires, interviews, assessment data, and focus groups. Using a mixed methods approach with multiple sources of evidence can result in findings that provide either similar or contrasting results despite being collected from different sources. Similar findings “increase confidence in the findings’ validity” (Robson 2002: 103); whereas contrasting results provide additional perspectives. For example, in this study the findings from the questionnaires might indicate that one of the partnerships appears to be a dense network with strong ties within the network and limited weak ties beyond the network. Interviews with members of the network may support such findings while also providing additional data to explain reasons for the abundance of strong internal ties and absence of external ties; or, the interviews may provide contrasting data suggesting that some of the ties between network members were not recorded by respondents. The reasons for these omissions from the questionnaires could be particularly revealing. The generation of either similar or contrasting data from multiple sources is a form of triangulation which affords the researcher the opportunity to examine school partnerships from more than one perspective.

The trustworthiness of a piece of research can be established based on validity, generalisability, reliability, reflexivity and triangulation. Each of these concepts takes on a different meaning in qualitative research than it does in quantitative research. Both contexts will be considered below since this study involves mixed methods.

If quantitative data are considered to be valid they measure what they set out to measure through careful sampling, appropriate instrumentation and appropriate statistical treatment of the data (Cohen et al. 2007). For this study, the validity of the quantitative data regarding network structures depends on the boundaries of the networks, the social network analysis questions asked, and the variables measured and described using UCINET 6.0 (Borgatti, Everett and Freeman 2002).

The validity of the qualitative data in this study depended on the “honesty, depth, richness and scope of the data achieved, the participants approached, the extent of triangulation” (Cohen et al. 2007: 133).

Due to the largely qualitative nature of this research and the purpose of the study, the findings cannot be generalized to other systems; rather, this research seeks to illuminate the processes and behaviours in the two partnerships regarding the research questions. While this research might inform other studies that seek to assess the generalizability of the findings, on its own it cannot be generalized to other systems.

Reliability in quantitative research pertains to the ability to replicate the results by having a high degree of control and standardisation. This definition of reliability is not directly applicable to qualitative research since, “the general non-standardisation of many methods of generating qualitative data precludes formal reliability testing” (Robson 2002: 176). Instead of defining reliability in terms of its ability to be replicated it can be associated instead with “credibility, neutrality, confirmability, dependability, consistency, applicability, trustworthiness, and transferability” (Lincoln and Guba 1985 cited by Cohen et al. 2007: 148). In this particular study neutrality may have been an issue for the participants who sought to present a positive picture since the continuation of their funding from Education Scotland was partially dependent upon their willingness to cooperate in events and activities related to the partnership. The fact that politics and funding are potential drivers of behaviour may have influenced the reliability of the results.

Reflexivity is “an awareness of the ways in which the researcher as an individual with a particular social identity and background has an impact on the research process” (Robson 2002: 172). As a researcher I am aware that my background as a teacher and a foreigner influences my thoughts and actions. Particularly pertinent to this study is also my experience teaching in schools in disadvantaged areas. Reflexivity involves putting aside my preconceptions as a former teacher who naturally empathises with other teachers, and particularly those teachers teaching in disadvantaged areas. Reflexivity also requires an awareness of how I may be perceived as a foreigner or outsider and the potential this has to influence my relationships with gatekeepers and participants.

Social Network Analysis

This study included data about the individual attributes of actors as they work to tackle educational inequity, and also data about the influence of the relationships between the individuals. This methodology emphasises the interdependence of actors using a whole-network approach to gain information about the ties within and between the partnerships. For this reason the study included both data about the individuals as they work to tackle educational inequity, and also data about the influence of the relationships between them.

Social network inquiries situated in these contexts face a variety of tensions. Some of the challenges are common among educational settings such as the practical challenges of achieving the necessary high response rate. Other dilemmas are more specific to individual research contexts such as maintaining continuity between a theoretical framework and the chosen methodology. Particular attention must also be paid to the ethical issues of exploring interpersonal relationships

The application of a social network approach to the exploration of relationships between educational actors engaged in school-based collaboration provides opportunities for a unique perspective of informal networks of relationships, however, the process of examining interpersonal relationships of educational actors also presents tensions and dilemmas. This section investigates issues encountered by the researcher studying relational linkages in educational settings.

Prior to 2006 there were few publications regarding the ethical use of SNA (e.g., Borgatti and Molina 2005; Kadushin 2005). There were even fewer publications applicable to the context of using SNA in educational contexts. An article, devoted to the ethics of using SNA in educational research, was published in 2006 by Penuel et al. Since then very little has been published regarding this topic. For example, Brian Carolan's book titled "Social Network Analysis and Education: Theory, Methods and Applications" (2013) includes just one short paragraph mentioning ethical considerations. The following discussion of ethics is based on the existing literature about collecting, sharing and analysing SNA data.

Collecting SNA data from participants requires special considerations regarding the response rate, data for non-respondents, and issues of anonymity. Obtaining the necessary high response rate is considered first.

A high response rate is desirable in any research setting, but in social network analysis the implications of missing data include invalid or unreliable representations of communities (Stork and Richards 1992; Penuel et al. 2006; Lima 2010; Wasserman and Faust 1998; Moolenaar 2012). For this reason a high response rate becomes an imperative if the analyses claim “to be a true representation of the network” (Borgatti and Molina 2005: 110). Moolenaar (2012) suggests, “the typical response rate needs to exceed 80% in order to detect meaningful and reliable relational patterns from the data” (p. 16). Obtaining a high response rate requires a commitment of time on the part of the researcher to build the trust of the participants, explain the purpose of the SNA approach and contact non-respondents. Additional time is required to foster trusting relationships between researchers and participants before asking individuals to participate. Added challenges to obtaining the high response rate include the fact that: the researcher cannot offer anonymity at each stage of the process due to the requirement that participants name themselves and colleagues with whom they interact; participation is normally voluntary; and SNA is usually unfamiliar to the participants. In this particular study participation was voluntary, although schools did receive funding from Education Scotland to participate in the wider project so schools had an incentive to satisfy any research requests from Education Scotland.

Meeting with participants in advance of administering an SNA questionnaire and explaining the purpose and design of the questionnaires can foster trust. Such a meeting provides the opportunity to clarify the boundary of the network, and to provide participants with information such as an introduction to social network analysis, the rationale for its use and how the data will be collected and used. In mixed methods research this is sometimes accomplished by interviewing participants prior to administering an SNA questionnaire, but it can also be accomplished by presenting a PowerPoint presentation to a group of participants and providing time for a discussion. Regardless of the methods used to build up the trust of the participants and then following up questionnaire responses, achieving a high response rate demands a significant time commitment on the part of the researchers involved.

Anonymity is also an issue in social network analysis since the collection of meaningful data requires respondents to name themselves and those with whom they interact. There is no way around this at the data collection stage. Later on, the data may be anonymised immediately after being collected. This, however, can cause additional challenges for

researchers who may be inhibited in their analysis if they are blind to respondent identities and/or attributes.

Another ethical consideration when collecting SNA data is the treatment of non-respondent data. In most educational research, data are not generated for those people who choose not to participate. SNA is different in this regard since a non-respondent may still appear on a sociogram if one or more respondents have listed their name. This poses ethical issues for the researcher who must decide whether or not to include information about non-respondents. Borgatti and Molina state that:

...the researcher is within his rights to include the non-respondent because the perceptions that others have of the non-respondent belong to them (the perceivers) and if they choose to divulge those perceptions in a survey, the subject of those perceptions has no say in it (2005: 110).

They also state, however, that if the researcher plans to include non-respondent data, they should include this on an expanded consent form. Borgatti and Molina's expanded consent form provides the opportunity for non-respondents to be entirely excluded, "such that data collected from others about her is ignored and does not appear in the analyses" (2005: 113). The expanded consent form should also include an agreement between the individuals, the organisation and the researchers and specific details about how the data will be collected and shared. If headteachers and local authority staff may potentially have an interest in the data they should also be required to enter into an agreement such that their use of the data would be limited in order to protect the participants. Participants need to be warned: "Perceptions held by management and/or co-workers about an individual may be altered by the study" (Borgatti and Molina 2005: 111). Samples of sociograms or other examples of network analysis should be shared to enable respondents to make an informed decision before agreeing to participate.

Interpretation of SNA data

Participants can be placed in vulnerable positions where they may potentially be judged negatively, especially if network data are misread or oversimplified. Hoppe and Reinelt use an example to suggest network data, such as network maps, should be employed "more for raising questions than for answering them" (2010: 616).

They provide an explanation using an individual, named Swinney, who is positioned on the periphery of a network:

It is important to withhold premature judgment and instead ask: Why is Swinney at the periphery of the map? Possible answers include: Swinney is new; he is disengaged, or he is a vital source of expertise and innovation who bridges to a group not drawn on the map (2010: 616).

Misreading or oversimplifying network data, such as the reasons for Swinney's position, poses a risk to participants with potential implications for their career or personal relationships, depending on who has access to the data (Borgatti and Molina 2005; Penuel et al. 2006). Researchers are responsible to participants and indeed all receivers of the findings to provide a careful and informed interpretation of the data.

Sharing SNA data

A teacher's participation in school collaboration is usually a public act, yet once data are collected, analysed and graphed in the form of a sociogram it takes on a new form.

"Network analysis always makes visible that which cannot be seen by the naked eye" (Kadushin 2005: 142). The question is whether or not these data that were initially public knowledge (who talks with whom) should be shared, either privately or publicly. In the process of documenting collaboration and/or creating a sociogram, do the data become more powerful and potentially dangerous?

The sensitive nature of the relationship questions asked and the potential mapping or sharing of the findings introduce situations in which individuals and educational communities can become vulnerable to negative exposure (Penuel et al. 2006). These risks can be divided into three areas: risks to the individual participants; risks to the schools or communities; and risks to the field of educational research. Risks to individual participants can be due to the nature of the sensitive and political questions that are asked (Penuel et al. 2006) and also risks due to the tendency for SNA measurements and sociograms to generate comparisons or assessments of the performance of an individual or of a community (Penuel et al. 2006; Woodland et al. 2014). Even if the names of schools or departments or individuals are not identified on a sociogram, small organisations or groups can often be identified based on patterns. For example, the position of a headteacher in a primary school may be evident. Similarly, particular departments or senior management staff in a secondary school might be identifiable. If their position on the sociogram portrays positive involvement in the community one might assume the lack of privacy should not be a concern; however, the research of Penuel et al. (2006) revealed

that teachers were not in favour of having the data available to school leaders if it was going to “be used to hold teachers accountable for their level of collaboration” (Penuel et al. 2006: 448). Similarly, if a sociogram paints a negative picture of an individual or a group of individuals who,

... are not reaching out across units as expected, a manager could judge those individuals to be failing, instead of seeing the isolation of individuals as an organisational or programmatic problem (Penuel et al. 2006: 440).

When SNA data are used to evaluate the positions of individuals, they also can be used by management for staff structuring or re-structuring (Woodland et al. 2014). Even if individuals or groups are not identifiable, participants tend to make guesses and assumptions about the identity of nodes when shown a sociogram. They may or may not be correct about their assumptions or guesses. This suggests that there are risks involved when sharing a sociogram without clarifying identities, but there are also risks involved when identities are revealed. A couple of possible procedures have been suggested to protect individuals and groups from being negatively assessed based on SNA data. Penuel et al. suggest the use of SNA data in regression modelling,

[S]hare the modelling results with schools in an understandable format. Here the purpose of the modelling would be to understand how particular kinds of social ties might lead to wider and more effective implementation of reform initiatives (2006: 449).

Rather than using regression modelling to embed the sensitive data, Kadushin (2005) suggests simply withholding network data from some groups or subgroups. He suggests groups or subgroups smaller than 25 persons are too small and any data generated from such groups cannot be shared without compromising the anonymity of individuals (Kadushin 2005). In educational research this would apply to departments within secondary schools and small primary schools. An additional approach is to share a large number of sociograms regarding a vast range of interactions among the staff such that it would be unlikely for any particular individual to be central or an isolate in every context. In considering these alternatives for protecting research participants’ employment reputation or position it is also important to consider the risks to their relationships with one another. The research of Penuel et al. reported teachers’ concerns that the sharing of SNA data had an “effect on their school’s goals to foster community” (2006: 437); presented the potential to cause conflict that “might sabotage ties formed on the team” (2006: 442); and “undercut the very goal of promoting teacher collaboration” (2006: 445). If participants feel that their relationships or status in their current position are at risk they will be less willing to participate in this type of research or be inclined to “answer in self-

serving ways” (Borgatti and Molina 2005: 108). This would suggest the possibility for participants to be less likely to provide valid answers or less willing to participate at all. Further discussions within the field of educational research are required to prevent these risks.

In this study all of the networks were larger than 25 people. There were also three different sociograms shared with participants covering a range of interactions.

Despite these risks there are opportunities for a researcher studying, encouraging and endorsing collaborative working to participate in a collegial manner. Rather than promoting a uni-directional “flow of knowledge from the research to the practitioner” (Daly 2015: 1), opportunities exist for knowledge co-construction. Blurring the divisions between practitioner and researcher, however, requires further scrutiny of the utility of social network analysis in educational contexts.

A collegial partnership that effectively promotes systemic change is dependent on the mobility of a variety of types of knowledge between all sectors:

...we need to see policymakers and practitioners not as the mere consumers of research or knowledge but as co-producers, playing an important and equal role in identifying and generating new understandings about how to get the very best from our schools and school systems (Harris et al. 2013: 16).

The transfer of existing knowledge between sectors in addition to the generation of new knowledge requires different types of network structures.

The potential for positive co-production of knowledge has been documented by researchers in fields other than educational research. Examples of practitioners sharing in the interpreting of SNA data suggest opportunities for practitioners and researchers to benefit from the generation of co-produced knowledge. For example, Cross et al. (2002) found that presenting a group with their network data served “as a powerful catalyst for change” (Borgatti and Molina (2005: 109). Laura Nader (1969) found the opportunity for a voice to be given to subordinates when sharing network visualisations. Borgatti and Molina also recommend the practice of “giving individualised feedback to respondents regarding their network position ... as it converts what may be seen as an exploitative exchange into an equitable exchange” (2005: 113). The research of Kothari et al. (2012) suggested social network data can be used as a reflective tool by health practitioners and researchers by co-producing knowledge regarding network function and composition. The

research of Woodland et al. (2014) involved school leaders and researchers co-producing social network data for the purpose of reducing teacher isolation and increasing system capacity for innovation.

Methodological issues when using SNA

Publications related to methodological issues pertaining to the use of social network analysis for educational research (e.g., Moolenaar 2012; Daly et al. 2010; Liou et al. 2015) propose new and emerging methodological strands. The main methodological issues to be discussed below include the dynamic nature of networks and organisational change; multiplex networks; multi-node networks; and researcher-participant divisions.

Research designs for exploring social networks are required which can cater to the continual changes within and between networks such as changing relationships, loss of network members, and change of network members. The inevitability of network churn and other dynamic changes suggest that a single time point should not be privileged. Multiple time points are beneficial for understanding “how ties are maintained, dissolved, and developed between and among leaders over time” (Loiu et al. 2015: 827). The use of longitudinal research designs is one approach to cope with the dynamic nature of educational networks and especially within the context of studying organisational change. Another suggested approach for the study of dynamic networks is the examination of real time data by observing conversations on social networking sites as they happen, in real time (Supovitz et al. 2015).

Relationships also exist between different types of entities such as people and associations or people and events, rather than simply people and people. The exploration of these types of relations requires a different approach than a simple one-mode approach. Multi-mode social networks can be helpful for studies within educational contexts involving relationships between teachers and schools, schools and local authorities, or teachers and local authorities, etc.

Methods used for the literature search

The focus of the literature search was school-to-school collaboration for the purpose of generating understanding, knowledge, and processes to tackling educational inequity. The first iteration was a preliminary search to find key terms related to the topic. This involved surveying journals, databases, bibliographies, catalogues, dictionaries, and subject-specific

reference encyclopedias with the purpose of finding key words and their definitions. The key words found in this first iteration of the search included: collaboration, partnerships, networks, achievement, attainment, outcomes, capabilities, inequity, inequality, and disadvantage. The literature was then used to define each term and draw connections between the terms. The analysis of these terms forms the first section of the literature review.

The second iteration of the literature search relied on publications from peer-reviewed academic journals and books. Yearly parameters were not applied, although it was clear from the returns that prior to 1990 there were few publications regarding school-to-school collaboration. Comprehensive educational research and social science databases were used: Education Resource Information Centre (ERIC), Scopus and EBSCOhost. Pilot searches were also conducted using JSTOR and Google Scholar. JSTOR did not yield any additional publications, but Google Scholar did yield additional books that had not been found through the other searches.

Additional key terms added for the second iteration of the search included: school, education, improving, improvement, effective, typology, network, collaboration, partnership, disadvantaged, equity, equality, challenging circumstances, networked learning communities, professional learning communities, and capabilities.

Publications relevant to the study of fostering effective collaboration within schools were read and analysed. The themes that emerged were divided into two categories: the results or outcomes of collaboration; and the conditions or network structures for effective collaboration. Sub-themes related to the results and outcomes of collaboration included knowledge innovation; knowledge diffusion or exchange; and knowledge between non-human entities. Sub-themes related to the conditions necessary for these outcomes included social cohesion; cultural recognition, and network purpose. An analysis of these sub-themes forms the second section of the literature review.

The process of reviewing the literature was helpful in revealing different methods of evaluating the effectiveness of school-school collaboration. Much of the literature approached partnership effectiveness from the perspective of social capital in metaphorical terms (Maroulis and Gomez 2008:1903) or teachers'

interpersonal interactions. Recent publications, however, rely on social network analysis to capture the structure of the full network of social ties (Daly 2010; Maroulis and Gomez 2008). This finding suggested that a third iteration of the search was needed. For the third iteration the following search terms were added: network theory, social network analysis, structural hole, and network closure.

In total 793 articles were returned from the second and third iterations of the search. Eliminated publications included those pertaining to online learning communities, pre-service teacher learning, school-university partnerships, school-outside agency partnerships, school-community partnerships, school-home partnerships and within-school partnerships leaving 128 publications relevant to school-to-school collaboration.

Two main gaps in the literature were found: the effectiveness of partnerships for tackling inequity; and the network structures of effective partnerships which cross school or local authority boundaries. For example, there weren't any studies at the organisational level in which teacher groups became the nodes of the network. A snowball process of using article reference lists and citation lists was then used to generate an additional 36 publications. Using this process relevant studies from outside of the field of education were found including inter-organisational studies of the network structures of business firms, health services, and health education.

The titles and/or abstracts of the 164 publications were read and articles were removed if they were not related to inter-organisational collaborations across boundaries and the relationship between generating new knowledge and network structure.

The list was narrowed to 14 main publications from which the following themes emerged: structural holes; network closure; network oscillation. These three themes were then used to structure an additional section of the literature review.

Data Collection

Data were collected over two and a half years from surveys of 75 educational professionals; interview and focus group data from 25 students and 18 educational professionals; 23 visits to schools; observations and notes from monthly meetings and six national events with partnership participants.

The data were collected from two different partnerships involved in the School Improvement Partnership Programme. The Cluain partnership included educational professionals from two primary schools in the same local authority. The Abhainn partnership included two different Local Authorities on either side of a large river involving 13 different schools.

My involvement in the programme included participation as a researcher and facilitator over two and a half years at national events, monthly drop in sessions, instructional workshops provided for educational professionals regarding Lesson Study and collaborative inquiry and school visits.

The first phase of data collection included reconnaissance such as attending SIPP events, school visits, and meetings to establish relationships with the partnership members, determine the partnership boundary and gain information to assist with the design of the questionnaire. SNA was unfamiliar to all the participants. For this reason, the second phase included giving presentations to partnership members to explain social network analysis. The next phase involved distributing and collecting questionnaires. The findings from the questionnaires were used to create sociograms that were used in the interviews and focus groups. An aspect of the interviews and focus groups was the sharing of sociograms to facilitate participants' understanding of the method and to elicit further contributions. The final phase involved gathering assessment data for each of the partnerships.

Ethical issues

The ethical issues include an awareness of the demands that the research may place on participants. By asking educational professionals to participate in the research they were being asked to voluntarily increase their workload. The research was intended to be of mutual benefit to both the researcher and the participants. A number of safeguards were put in place to protect the time commitment and the confidentiality of the participants. Questionnaires and interviews were limited in their length to avoid being overly time consuming. Confidentiality of the participants was protected by making sure that no one had access to the identifiable data except for me. When I was not using the "key" for linking data (showing names of teachers, schools and local authorities) I only analysed non-identifiable data. In this thesis and in all future publications the participants, schools and their local authorities are identified using pseudonyms.

During the interviews the sociograms that were shared did not reveal identities of individuals. If the partnership was made up of more than one local authority then the individual's own local authority was colour coded on the sociogram and that colour was revealed to the interviewee. If the partnership only represented one local authority then the individual's own school was colour coded on the sociogram and that colour was revealed to the interviewee. This was for the purpose of facilitating discussions about the structure of the partnership.

Phase one: Reconnaissance

The first phase of the study took place over a 15-month period. This time was used to: identify partnerships to designate as case studies; determine the boundaries of each partnership; and design the questionnaires. Of the eight SIPP partnerships to choose from three partnerships stood out due to the progress they had made at the time of the selection. It was felt that these three would be most appropriate to use as case studies because they were furthest ahead in the process. Invitations to these partnerships were made during conversations either in person or over the phone. Two of the partnerships involved primary schools and the third involved secondary schools. Two out of the three case studies that were originally approached granted permission for the research. Despite pressure from Education Scotland, the headteachers from the secondary schools chose not to be involved. They provided the following response:

We are absolutely snowed under at the moment and our teachers are really under pressure in developing and delivering our new National Qualifications - I'm afraid I just can't ask them to take on any more. (headteacher)

The other partnerships who did agree to participate involved primary schools and therefore were not in the process of developing and delivering the new National Qualifications. Good working relationships were developed with the educational professionals involved in these school partnerships. I had already met several headteachers, teachers and QIOs from each of the partnerships. Emails were sent to every QIO and headteacher. The two committed partnerships were sent additional emails outlining the research including a participant information sheet, consent forms for educational professionals and pupils. Presentations were given to each of the partnerships. The network boundaries were discussed and the lists of names provided on the SNA questionnaires were modified accordingly. Access to online questionnaires was provided and data collection took place

during 2015 for the Cluain partnership and the Abhainn partnership. The data collection for the second time point for both the Cluain and Abhainn partnerships took place in 2016.

The flexibility of the adapted approach allowed for two different case studies, but they were not of equal depth or duration. The data from the second time point for the Abhainn partnership did not have a high enough response rate to be included in the data analysis. The use of SNA in this study began with the selection of a partnership that was large enough to justify a whole-network approach, but small enough to promote a high response within the time constraints. In addition, both the Abhainn and Cluain partnerships appeared to have formed an informal partnership relationship between them.

The network boundaries were determined by consulting teachers in the partnership and asking them to provide any additional names of participants who had been active in the partnership. In both partnerships this process resulted in the addition of local authority staff and the removal of teachers no longer teaching at the schools due to sick leave or employment changes. In total, the network boundary for the Cluain partnership included 36 teachers and headteachers and 4 local authority staff. The boundary for the Abhainn partnership included 23 teachers and headteachers and 4 local authority staff.

Phase two: Questionnaires

The questionnaire (Appendix B) was designed to open with introductory questions regarding personal attributes which could be answered quickly. These questions were followed by questions pertaining to educational inequity. Most of these questions made use of a 5-point Likert scale to gain “insight into what people feel or believe about something” (Robson 2002: 292). A Likert scale was chosen because it is easy to develop, suitable for questions regarding participant beliefs about inequity, looks interesting to respondents, and is reported to be enjoyable for respondents to complete (Robson 2002). These questions began by asking respondents for their views regarding causes of educational inequity before asking for their opinions of possible initiatives to use to tackle the issue. The questionnaire was designed such that it did not assume participants believe school partnerships can tackle educational inequity, but provided the opportunity for respondents to suggest ways of partnering which may facilitate the tackling of aspects of it. The possible mechanisms and contexts for educational inequity mentioned in the questionnaire included socio-economic background or family circumstances, school resources, pupils’ additional support needs, competition between schools and local

authorities or an over-emphasis on assessment. This list was generated through the process of exploring theoretical frameworks and enabled the analysis of the survey to move beyond description to explanation.

A small-scale piloting of the questionnaire was carried out with a school in a different local authority. The questionnaire was given to a number of individuals who provided critical comments: a quality improvement officer (former primary school headteacher), secondary school headteacher, and others with experience using SNA (from the University of Glasgow and Southampton University). Each of these individuals provided suggestions based on either their experience as research participants, or their experience as researchers. The questionnaire was then modified based on the advice provided by these critical friends.

Members of the partnerships completed questionnaires. Some of the parents/carers of the Primary 6 pupils were also invited to participate in interviews. Schools were asked to deliver consent forms to parents and provide parent contact details. One of the schools was very helpful and two parents were successfully contacted. These parents were interviewed over the telephone but due to the very limited data acquired from parents it was not used in the analysis.

A fixed-choice bounded approach was used for collecting the network data. The questionnaires included a roster with names of participants to choose from. Participants were permitted to choose as many names as they wished. This fixed-choice bounded approach was chosen over a free-choice approach in which participants would have been required to generate names by memory. The choice of a bounded approach has been shown to produce more reliable results and reduce measurement error (Scott 2000; Wasserman and Faust 1998).

The questionnaire for the first two case studies was created as an online questionnaire using Survey Monkey for two reasons. The use of online questionnaires rather than paper questionnaires provided data that were more easily accessed for analysis. Secondly, the online format was chosen due to the need for a high response rate. If paper questionnaires had been used instead of an online questionnaire either the researcher would have had to travel to each of the 15 schools to collect completed questionnaires or ask each of the schools to post the questionnaires back to the researcher. Both of these methods were

perceived as time consuming and as a risk to the desired high response rate. The questionnaire for the first timepoint was distributed to participants in May 2015. Despite the hopes of receiving all of the questionnaires online, by the time of the June 2015 SIPP National Event there were still some participants who had not completed the online questionnaire. Paper copies of the online questionnaire were printed and taken to the National Event where some of the teachers completed paper questionnaires. By the end of the school term the combined use of both online and paper questionnaires resulted in a response rate of 93% for the Cluain partnership and 81% for the Abhainn partnership.

Gathering responses for the second timepoint was more challenging for a number of reasons. The funding had come to an end and most participants were no longer attending national events. In an attempt to acquire as many responses as possible, I administered the questionnaire at staff meetings in both of the schools in the Cluain partnership in February 2016. Presentations were given to the staff at a staff meeting, paper copies of the questionnaire were distributed immediately afterwards and the staff completed and submitted their questionnaires to the researcher. This approach was not feasible for the Abhainn partnership since it involved 13 schools over a much larger geographic area. The questionnaires were distributed online, but the resulting response rate was very low.

	Responses	Whole network	Response rate (%)
Cluain partnership (2015, first time point)	40	43	93
Ahbainn partnership (2015, first time point)	27	33	81
Cluain partnership (2016, second time point)	37	46	80
Ahbainn partnership (2016, second time point)	18	33	54

Table 9: Survey response rates

The SNA questions on the questionnaires for both time points asked participants to name those people with whom they had discussed: a) innovative or new learning and teaching ideas; b) tried and tested learning and teaching ideas; c) educational inequity. Respondents answered these question by providing between 0 and 22 names. The names were coded. The code was securely stored by the researcher to protect the identity of participants, schools, and local authorities. Using the coded data a DL file was written in Microsoft Word in the form of a nodelist. Using the SNA software UCINET (Borgatti, Everett and Freeman 2002), the nodelist was saved as a dataset. The sociogram was then created using Netdraw (accessed using UCINET).

Phase three: Interviews and focus groups

Prior to conducting the interviews and focus groups, signed consent forms (Appendices F and G) were collected from each of the educational professionals and the parents or carers of the pupils involved. I audio-taped and then transcribed each interview and focus group.

The interview schedule for educational professionals (Appendix C) covered three main themes: understandings of inequity; partnership characteristics and network structures that aided their effectiveness; impact on pupils. Participants were also shown three sociograms of their partnership. The use of the sociogram was discussed and used as a tool to elicit further discussion about the structure of the partnership. A social network analysis approach was unfamiliar to all of the interviewees. For this reason part of the interview involved facilitating participants' understanding of the method itself by showing them the sociograms, explaining how they were produced and providing a brief description of how they could be interpreted

Interview participants were initially selected based on data from UCINET metrics. Using UCINET each individual's degree, Freeman betweenness, and density were calculated. Participants who had either the highest or lowest values in each of these domains were identified. Requests for interviews were sent to headteachers and local authority officers. None of the local authority officers except one were initially willing to be interviewed. After further contact with the local authority officers an additional local authority employee agreed to be interviewed. The classroom teachers were not contacted directly, but through the headteachers. The headteachers were, for the most part, reluctant to permit teachers to be interviewed due to concerns regarding class release time. When I arrived at each school the teachers who were available for an interview were not always the teachers

I had initially requested. All of the headteachers except one were willing to be interviewed. After further contact with this headteacher a telephone interview was arranged. Many of the teachers who had been chosen based on UCINET metrics were not interviewed, but other teachers were interviewed instead. Two of the schools requested focus groups instead of interviews.

When the interviewees were known in advance, interview preparation included reading the participant's questionnaire responses and examining the sociograms for their partnership. For example, one of the partnerships revealed a local authority officer on the periphery of the partnership for discussions related to tried and tested learning and teaching ideas, but not on the periphery for discussions related to educational inequity. This observation was mentioned during the interview and the interviewee was asked for their perspective of this apparent difference. These types of personalised questions were devised for most of the interviews. Examining the network data in advance of each interview and designing the interview accordingly was a time consuming process. This time commitment was worthwhile due to the resulting interview data that provided insights into the network structures.

Interview participants were informed in advance that the sociograms would be shared with them during the interviews. The decision to share the sociograms during the interviews was for the purpose of using the sociograms to facilitate discussions about the structure of the partnership by providing a visual aid. The sociograms were colour-coded such that the person's local authority was identifiable, but not individual people. For those participants who requested to know who they were on the sociogram this information was shared, but all other identities remained anonymous. For those participants in focus groups, none of the identities on the sociogram were revealed to protect the identities of each person present.

The audio-recorded interviews provided qualitative data that helped to establish explanations for the quantitative SNA findings, a means of integrating micro and macro aspects of the partnerships, and provided a means of checking the results of the qualitative findings related to SNA (triangulation).

A question about critical incidents was included in the interview schedule. Research question 1 lends itself to the use of this analytical tool since it relates to personal beliefs

and understanding. Critical incidents are significant interruptions to one's current values, opinions, theories, assumptions and priorities. The result of the interruption can be a time of questioning or even a change in professional behaviour. Critical incidents can be experienced alone or with others. This type of data can be useful for tracking the movement of knowledge within and between the partnerships involved in this study. Examples of critical incidents are words or actions performed that propelled the partnership forward or caused it to stagnate.

Semi-structured schedules were adopted to guide the interviews and focus groups (see Appendices C, D and E). The use of semi-structured interviews was chosen to allow the researcher flexibility in initiating additional prompts and questions depending on the participants' responses. This format provided greater flexibility than a structured format, but more structure than an open format. Examples of useful modifications made to the schedules for the interview and focus group schedules for the educational professionals included the addition of the following questions:

- What advice would you give to other partnerships?
- Were there any key events or critical incidents in the forming of partnership relationships?
- Can you tell me about the different leadership roles that people took on? Were these roles fluid? Did they change depending on the context?

These questions were not part of the original schedule, but their addition proved helpful in generating useful data for the analysis.

Pupil focus groups were conducted in four different schools across all three local authorities involved in the study. The smallest focus group included only three pupils and the largest included nine. In total 25 pupils ranging in age from 9 – 11 years old took part in focus groups. Two of the focus group discussions took place at schools where CGI had been implemented by the teachers and the other two were at schools where Reciprocal Reading had been implemented. The different semi-structured schedules used to guide these focus group discussions are found in Appendices D and E. In addition to the questions included on the schedules, additional prompts and questions were added depending on the participants' responses. For example, a question about fairness proved to be a useful modification to the pupil schedule.

Data analysis

A range of both qualitative and quantitative data was analysed to address the research questions. Data from questionnaires, interviews and focus groups were analysed to investigate the extent to which school partnerships can facilitate educational professionals' development of collective values and new initiatives to support the tackling of educational inequity (Research question 1). To investigate how the social network structures of school partnerships influence educational professionals' generation of new knowledge and educational professionals' exchange of existing knowledge (Research questions 2a and 2b) social network analysis was used. The third research question focused on the effect of partnership characteristics on school level achievement in mathematics and literacy in disadvantaged areas.

Difference in differences

To analyse the impact of the SIPP intervention on pupil achievement it was hoped that a statistical approach called Difference in Differences could be used to compare observations for two groups over two time periods. This approach was chosen because it is suitable for comparing observations for two groups for two time periods. In the Cluain partnership there were two groups of Primary 5 pupils. One of the groups was involved in the SIPP Programme and took part in both a pre- and post-assessment in mathematics. The other group was not directly involved in the SIPP programme, but still completed the pre- and post- mathematics assessment. Primary 5 pupils were observed in each time period and the average gain in the control group was subtracted from the average gain in the treatment group. This was done to remove biases in second period comparisons between the treatment and control group that could be the result of permanent differences between these Primary 5 groups, as well as biases from comparisons over time in the treatment group that could be the result of trends. To do this I ran a regression analysis using the following model:

$$y = \beta_0 + \beta_1 T + \beta_2 G + \beta_3 (T \cdot G) + \epsilon ;$$

where y is the score on the mathematical assessment, T is a dummy variable for the time period (pre- or post-assessment), G is a dummy variable for the group membership (treatment or control); β_0 , β_1 , β_2 and β_3 are coefficients; β_3 is the coefficient of interest.

The group membership dummy variable G captures possible differences between the two groups prior to the SIPP programme. The time period dummy, T, captures aggregate factors that would cause changes in the assessment score even in the absence of

involvement in the SIPP programme. The composite variable ($T \cdot G$) is then a dummy variable indicating when $G = T = 1$. The coefficient of this composite variable, β , is the coefficient of interest.

After a close examination of the data it was decided that this approach was not suitable for several reasons. The sizes of the control group and target group were too small: less than 15 in one of the schools. There were a number of factors making it impossible to clearly distinguish between the control group and target group. Inconsistencies caused by a change in the pre- and post-assessment tests part way through the programme made it difficult to compare the pre-assessment results to the post-assessment results.

Furthermore, many teachers involved in the programme expressed concerns about the limits of the quantitative data and chose instead to emphasise a variety of sources of qualitative evidence. For these reasons the impact on pupil achievement was analysed by relying on qualitative data provided by both educational professionals and pupils, rather than relying on quantitative data.

Qualitative data analysis

Analysing the interview and focus group transcripts involved selecting key points or codes to be highlighted in the text. The initial codes included pupil capabilities, and relationships and network structures of educational professionals. The first code, pupil capabilities, was informed by the research questions and the work of Sen (1992, 1999), Robeyns (2005; 2016) and Adair (2014) who suggest the development of capabilities involves opportunities for choice, agency and recognition of difference leading to increased equity. The second code, relationships and network structures of educational professionals was informed by equity-focused improvement strategies using collaboration between educational professionals (Ainscow et al. 2012b; Ainscow et al. 2016; Chapman et al. 2015; Daly and Finnigan 2010; DfE 2005).

Each of the codes had a number of associated theoretical concepts, also informed by the review of the literature, which were noted in the margins of the transcripts. The following table outlines the codes and associated concepts:

Codes	Concepts
pupil capabilities (turquoise)	<ul style="list-style-type: none"> • freedom to choose • dialogue leading to difference • dialogue leading to assimilation • views/understanding regarding inequity • distribution of resources • recognition of difference • individual versus community values and needs • increased achievement/progress
relationships and network structures of educational professionals (pink)	<ul style="list-style-type: none"> • brokering • power structures • blockages/inhibitors/challenges

Table 10: Qualitative data analysis codes and concepts

An excerpt from the transcript of an interview with an educational professional.

<p>Codes highlighted:</p> <ul style="list-style-type: none"> • turquoise represents pupil capabilities. • pink represents relationship and network structures of educational professionals. 	<p>Concepts</p>
<p>00:40 Una: We had started it [Reciprocal Reading] but our angle on it was more about personalisation and choice</p>	<p>freedom to choose</p>
<p>01:45 Una: ...I think the research stuff has given us that kind of inquiry that maybe we wouldn't have cared about before.</p>	<p>collaborative inquiry</p>
<p>04:05 Una: It's totally changed my practice – the experience. I'm very good at deciding I think this would be really good, go away and do it and then never really prove that it made a difference because anecdotally I can but I've never really been into proving it, and this made it quite a simple way to do it and I like the fact that it wasn't specifically just focused on tests because I don't always think that tests give you an actually true reflection. We also proved that our capacity of our teachers has increased because their questionnaires before and their questionnaires afterwards were much more positive, much more confident. For me that's more important than one set of children gaining results. This for me will have a longer term. A path as well where I've now engaged with RAFA because of this.... And the other thing we're looking at is we've stolen the CGI, but one of the teachers we had a dating agency for our teachers where they all went to do some speed dating and one of our teachers went to --- that was also doing the project doing CGI and she went through there and because I already knew about it I was like I love it. She's been selling it and in here the way we do change is somebody brings along an idea, kind of trial it and it grows so it's almost a sew and grow approach rather than a plop in all-do. So she's totally sold on it. So there's a working party for that this year. And they've been working with RAFA to look at - What are our goals? How are we going to measure this? It doesn't have to be the test to measure attainment. Which is a major mind shift for me that I don't need to be tracking every single child's attainment in the school to prove that what we're doing actually makes a difference.... I'm noisy so I'm like can you take us on a tour? Show us what you're doing? And off we went.</p>	<p>collaborative inquiry</p> <p>assessment/accountability</p> <p>sustainability</p> <p>brokering</p> <p>brokering</p> <p>attainment/accountability pressure</p> <p>invisible network outside SNA network</p>

Table 11: Transcript of voice recorded interview

After coding the transcripts and analysing the SNA data it was noted that additional concepts had emerged from the data. The following emergent concepts, related to school networks, were added:

- local authority differences in support
- assessment/accountability pressure
- invisible networks outside of visible SNA network
- collaborative inquiry
- innovative vs. existing knowledge
- sustainability

My decision to use a grid to collect and sort the data was informed by Lubienski (2000). Lubienski used a table to organise and compare socioeconomic status (SES) and gender groups' experiences of class discussions in mathematics. For the present study this idea was adapted by designing a large grid with the codes and concepts listed vertically and a column for each group of participants arranged horizontally (see Appendix I). The groups of participants were divided by pupils and educational professionals. This information was combined with the questionnaire data and SNA data to answer each research question.

Educational professionals involved in the SIPP were asked about the extent to which their involvement in the programme supported their development of new approaches to tackling inequity (2015 questionnaire numbers 14, 17; 2016 questionnaire number 10; interviews and focus groups questions 2.3, 2.4, 2.5).

The questionnaire answers were provided by the educational professionals online using Survey Monkey. These answers were exported from Survey Monkey to Statistical Package for the Social Sciences (SPSS). SPSS was used to calculate frequencies for the answers to these questions. Interview and focus group comments regarding the use of new initiatives (Questions 2.3, 2.4, 2.5) were also coded and categorised thematically to illuminate patterns and processes.

Questions 11, 12 and 19 in the 2015 questionnaire and questions 8 and 11 in 2016 were specifically about educational professionals' values and understanding regarding the tackling of educational inequity. Frequencies of these answers revealed the extent to which values and understanding were shared by those in the same school, same partnership or same age or experience demographic. Together the data from the questionnaires and

interviews contributed towards triangulation. Pupil focus group data also provided a unique perspective of the pupils' experience of the programme. The inclusion of pupils' perspectives in the research approach is sometimes referred to as pupil perspective research or student voice research (Blackman 2011). There is evidence to suggest pupils can identify factors which they believe have a great impact on their learning (Rudduck et al. 1997). Existing research indicates the use of pupil perspective benefits teacher development (Flutter 2007) and informs teacher decision-making (Rudduck et al. 2003). Pupil contributions from their focus group transcripts were used to answer research question 1(b).

SNA

To identify differences in the social structures within, between, and beyond the schools, social network analysis was used at two different time points. Ties within and between partnerships were examined using a whole network approach. Depending on teachers' experience and their interpretation of the questions, there was the potential for the answers to questions a) and b) to be very similar, consequently the results of these questions were tested for distinctness to determine whether or not respondents answered differently. This was done using a QAP (quadratic assignment procedure). Results of QAP:

	Cluain partnership	Ahbainn partnership
QAP correlation (between existing knowledge network and innovative knowledge network)	0.61	0.74

Table 12: QAP correlations

The results of the QAPs confirmed that the answers to the questions were different enough to warrant a separate analysis of each question. Using the SNA data collected from the questionnaires, sociograms were created and shared with interview participants. Participants helped to illuminate the SNA findings.

Degree centrality is the number of ties received by an actor (in-degree) or given out by an actor (out-degree) (Carolan 2014). In-degree centrality measures how well connected or how popular an individual is in the network. This is measured by counting the number of in-going ties divided by the total number of potential in-going ties. High in-degree suggests increased access to information and influence. It can also reflect an increased burden of maintaining many ties (Daly and Moolenaar 2014). Actors with high in-degree usually have a high number of ties with actors from their own affiliation group suggesting access to bonding capital. It provides a means of measuring an actor's power potential since the more ties held by an actor, the greater their opportunities, choices and autonomy. More ties also suggest access to more information or more perspectives, as well as more opportunities to share one's own perspective and resources. In-degree is defined by the following equation:

$$C_D = \sum \frac{d_i}{N-1} ; \text{ where } d_i \text{ is an individual's number of in-coming ties and } N \text{ is the number of actors in the network.}$$

It should be noted that densities of networks of different sizes cannot be compared since it is easier for the smaller network to have more ties (Borgatti et al. 2003).

Betweenness counts the number of times an actor is positioned between disconnected others thereby bridging a structural hole. Actors with high betweenness measures tend to be in powerful positions to broker or control information. Usually these actors are brokering with actors from different affiliation groups to their own, thereby accessing bridging capital. This position is often advantageous for controlling or gatekeeping the flow of non-redundant or innovative information and resources between separate parts of a network or between networks. Freeman betweenness cannot be used in networks with isolates. For this reason betweenness calculations done in this study involved leaving out the isolates by using subnetworks of the original networks.

Betweenness is defined by the following equation:

$$C_b = \sum \frac{g_{jk}(N_i)}{g_{jk}} ;$$

where g_{jk} is the number of geodesic paths between the two nodes i and j and $g_{jk}(N_i)$ is the number of geodesics between j and k that contain node i .

Density is the number of ties in a network reported as a fraction of the total possible number of ties (Carolan 2014). Density is a ratio of the existing ties divided by the total number of possible ties between actors with a system. An advantage of high density within a network includes increased channels of communication to promote the exchange of information and knowledge leading to trust and shared norms. By promoting the movement of redundant information, high density networks can also inhibit the exchange of non-redundant information. A high density score indicates a highly connected network suggesting greater stability over time. Density is defined by the following equation:

$$D = \frac{L}{N(N-1)} ; \text{ where } L \text{ is the total number of ties in the network and } N \text{ is the number of actors.}$$

Group E-I index is a ratio comparing the number of external and internal exchanges in a group. An E-I index of +1 indicates a group in which all of the ties are external to the group; whereas, -1 indicates a group in which all of the ties are internal to the group. The E-I index is defined by the following equation:

$$E - I_{index} = \frac{E_L - E_I}{E_L + E_I} ; \text{ where } E_L \text{ is the number of external exchanges and } E_I \text{ is the number of internal exchanges.}$$

UCINET performs a permutation test (N = 5000) to assess whether the network E-I index is significantly different from expected.

Two different methods were used to calculate the E-I index. Initially UCINET was tried for all of the E-I index calculations, however, attempts to calculate the E-I Index using UCINET sometimes resulted in problems. After opening the appropriate Input Data Set and Attribute Data Set an attribute was chosen. At this stage the following message sometimes appeared: File does not exist. To solve this problem ".##d" was added to the end of the file name which provided access to the next step. An attribute could be chosen at this point, but after clicking OK the following message appeared: Proximity matrix must be square. Sometimes the E-I Index file of calculations appeared, but then the Group Level E-I Index listed 29 groups for schools when there should only be 3 possible groups for schools. A way around this problem was to calculate missing E-I indexes without UCINET. By counting ties using the sociograms and using the E-I index formula the E-I index values were calculated. Sample E-I index results that were successfully calculated

using UCINET were also calculated by hand and then compared. The matching results confirmed consistency between the two different methods used.

Methodological limitations

There are a number of other methods which may have been just as effective or more effective than those chosen during the course of this research. There were also issues related to school partnerships and the tackling of inequity which could not be included due to limitations of time and accessibility. One limitation was the choice of one of the case study partnerships that was already heavily committed to a number of research projects such as Knowledge Into Action. The local authorities and headteachers from this partnership were reluctant to participate in the research due to their commitments to other research projects.

The choice of two very different partnerships had both advantages and disadvantages. Due to the differences between these partnerships it was not possible to make direct comparisons. One of the partnerships involved only two schools in one local authority. The other partnership involved 13 schools in two local authorities. This made it impossible to make direct comparisons of quantitative or SNA data. At the same time, having two very different partnerships generated a wealth of varied qualitative data.

Using an SNA approach for the first time demanded a significant amount of time to learn how to collect SNA data, choose methods of analysis and analyse results. More data for the second time point would have been helpful. To achieve this it would have been beneficial to collect the data for the second time point much earlier in the programme while all of the schools were still receiving funding. More time spent collecting data regarding the sharing of sociograms in an interview context would also have been an innovative and useful contribution to the field.

The lack of control groups for the achievement data of the pupils involved in this study prevented the use of a Difference in Differences approach to the analysis. If control groups had been used by the partnerships involved, then a statistical analysis could have been run to compare the achievement of targeted pupils to non-targeted pupils.

While participating as a researcher I held a supportive role for educational professionals as they implemented new approaches to professional development and classroom teaching

such as Lesson Study and collaborative inquiry. As someone who had developed working relationships with participants in the project I had an interest in the success of their work. This enabled me to observe many details and events over the course of my involvement which was advantageous in many respects. Despite managing to remain as neutral as possible to the participants involved, I became more involved in some of the initiatives. I had a keen interest in Lesson Study and CGI prior to becoming involved with the partnerships. I tried to collect just as much data regarding other initiatives, but I feel that the collected data did not include as much detail regarding Reciprocal Reading, nor did it include data regarding Instructional Rounds.

Chapter summary

Methods for this research were chosen to accommodate an examination of interactions among educational professionals, between educational professionals and pupils and between the concepts of inequity and education. A pragmatist approach using mixed methods, including social network analysis, satisfied these criteria.

The choice of an SNA approach presents challenges regarding the acquisition of the required response rates, ethical issues and choices regarding the sharing of the data. There are also advantages to choosing this approach for educational research. An SNA approach has been used: to enhance the value of collaboration, increase capacity for innovation, give a voice to subordinates, reduce teachers' experience of isolation, share knowledge between researcher and participants, and study more complex relationships (Liou et al. 2015). This methodology also encourages the development of social capital among educational professionals as a means of generating innovative solutions to issues such as educational inequity.

A social network approach must begin with a shared understanding, between the researcher and participants, of the purposes of the research. Trusting relationships, between the researcher and participants, should be a necessary prerequisite before using SNA. Researchers must be aware of the ethical, moral and operational vulnerabilities of embarking on an SNA approach. Sensitive social network analysis data must be shared carefully if it is to protect the future of the field of SNA and support educational change.

The issues involved in using an SNA approach present a number of challenges, but the promises outweigh the challenges. Achieving an understanding of the significant

relationships through which educational professionals, schools and systems bring about positive change for their pupils promises a greater understanding of the improvement processes of public education systems.

Chapter Six: Findings for research question 1

This chapter and the following chapter present the findings as answers to the research questions. After the findings have been presented in this systematic way, the discussion chapter explores connections between the findings and the literature.

The research questions focus on the factors that shaped each partnership's potential to either increase or decrease the potential for equitable education. These factors were examined through the lens of the capability approach which suggests conversion factors can either promote or challenge the conversion of resources into valuable opportunities to provide freedom and access to capabilities. Evidence of either the negative or positive impact of conversion factors on the partnership's ability to fulfil its purpose was found in the questionnaire data, interview and focus group transcripts, and SNA data. The data revealed some pupils and educational professionals experienced a degree of increased freedom and autonomy as a result of collaborative working within supportive systems. Substantial overlap was observed between the experiences of pupils and educational professionals. These experiences interrupted the existing social norms, rules, power structures and pedagogy. This chapter will address the research questions by subdividing the themes that emerged from the data into the conversion factors noted in Tables 13 and 14.

Table 13 summarises the development of capabilities in educational professionals by listing both the conversion factors that inhibited or promoted the conversion of resources into opportunities and the resulting capabilities.

1.(a) educational professionals

Theoretical framework	Significant conversion factors shaping partnership (named as social conversion factors in capability approach)	Capabilities developed (thereby increasing the potential for equitable education)
Capability approach	<p>(i) social norms such as collective values, leadership, relationships (between teachers, pupils and other educational professionals)</p> <p>(ii) classroom, school or system climate encouraging/ discouraging cooperation, competitiveness, acceptance of difference or tendency for ridicule</p> <p>(iii) assessment procedures</p> <p>(iv) bridging capital and bonding capital allowing exchange of knowledge and understanding</p>	<p>The freedom to choose which new approaches to implement in the classroom.</p> <p>The opportunity to participate as a bridge or broker.</p> <p>The opportunity to choose to be part of a network.</p> <p>Freedom to experiment, innovate and make pedagogical changes.</p> <p>Freedom to design and implement appropriate assessment.</p>

Table 13: Capability development in educational professionals

Table 14 summaries the development of capabilities in pupils by listing both the conversion factors which inhibited or promoted the conversion of resources into opportunities and the resulting capabilities.

1.(b) pupils in primary school mathematics

Theoretical framework	Significant conversion factors shaping partnership (named as social conversion factors in capability approach)	Capabilities developed (thereby increasing the potential for equitable education)
Capability approach	(i) social norms such as relationships between teachers and pupils, between pupils and pupils (ii) school and classroom climate encouraging/discouraging cooperation, competitiveness, acceptance of difference or tendency for ridicule (iii) assessment procedures	The freedom to choose which method to use to solve a math word problem. The freedom to choose to participate in a community by creating a math method with a peer(s) or a teacher or independently.

Table 14: Capability development in pupils

Research question 1 (a)

To what extent did the School Improvement Partnership Programme facilitate (a) educational professionals' development of collective values?

When asked about factors contributing to the success of their partnership many of the educational professionals emphasised the significance of establishing collective aims and values. Evidence of consistency regarding aims and values for the partnerships was found in the questionnaire data and interview and focus group transcripts.

Benefits of developing collective values

During the interviews and focus groups educational professionals were asked: What advice would you give other partnerships? In response to this question some of the educational

professionals mentioned how a joint aim influenced level of commitment. One of the headteachers from the Abhainn partnership (a pseudonym) responded by providing the following advice:

Work out what your aim is and make sure it's a joint aim because if you're not committed to the aim - if you're not committed to the aim of the project you're not going to be committed to the project.

(Una, Abhainn partnership)

Participants also mentioned how the sharing of a communal goal within their partnership created cohesion which lead to sustainability.

I felt we all had a communal goal and a communal interest and a shared vision and that really brought us all closer together. And the things that have come out of it like two of the teachers from [our local authority] are at university just now looking more at the [maths] approach that we used....It's having so much impact.

(Claire, Abhainn partnership)

One of the headteachers emphasised that although the Standard for Registration may require teachers to make a difference in areas such as educational inequity, it can't be assumed that everyone believes this aspiration is attainable.

You can make it happen, but you have to make it a priority. And everybody has to believe and that's why I suppose you go back to the inequity one. If everyone believes that this is going to make a difference then they might invest....It's in the Standard for Registration – you know, that you are there to make a difference.

(Beitris, Abhainn partnership)

Despite these positive responses, some of the educational professionals mentioned the lack of coherence at the beginning of the programme.

For me the aim of the original SIPP project was a bit muddy. There was never a clear aim of what we were doing other than raising attainment.

(Una, Abhainn partnership)

The first year meetings were awful. Nobody knew what they were doing.

(Gillian, Abhainn partnership)

These teachers, who mentioned the initial confusion regarding the aims and purposes, explained that their partnerships managed to persevere and eventually establish shared purposes thereby contributing to the cohesion, commitment and sustainability of their partnerships.

Measuring agreement on aims, aspirations and understanding

To check the degree to which the partnership members agreed on their partnerships' aims and aspirations responses to two questionnaire items were examined. Question 10 asked

participants: What type of educational inequity has your partnership been designed to tackle? The answers for the Cluain partnership demonstrated 90% of the respondents chose the addressing of inequities in pupil attainment as an aspiration of their partnership. This high agreement rate suggests members of the Cluain partnership were in accord regarding the shared purpose of their collaborative work. It was not surprising that most respondents chose pupil attainment since this purpose was emphasised by the national body providing the funding for the projects; however, not all of the respondents chose pupil attainment. The respondents who did not answer pupil attainment were teachers with more than 16 years of experience who were not in leadership positions such as a headteacher or local authority officer. The teachers with more than 16 years of experience who did not choose pupil attainment chose pupil opportunities as a purpose of their partnership.

A limitation of these findings was the wording of the survey questions. Pupil attainment was included as a possible answer on the survey, but pupil achievement was not. For those educational professionals who perceived pupil attainment to be a very narrow measure, there were limited alternatives. This may have explained the choice of some of the educational professionals to choose pupil opportunities as an alternative to pupil attainment.

Cluain partnership - Question 10

**Q10 What type of educational inequity has your partnership been designed to tackle?
(Please tick as many categories as necessary.)**

Answered: 40 Skipped: 0

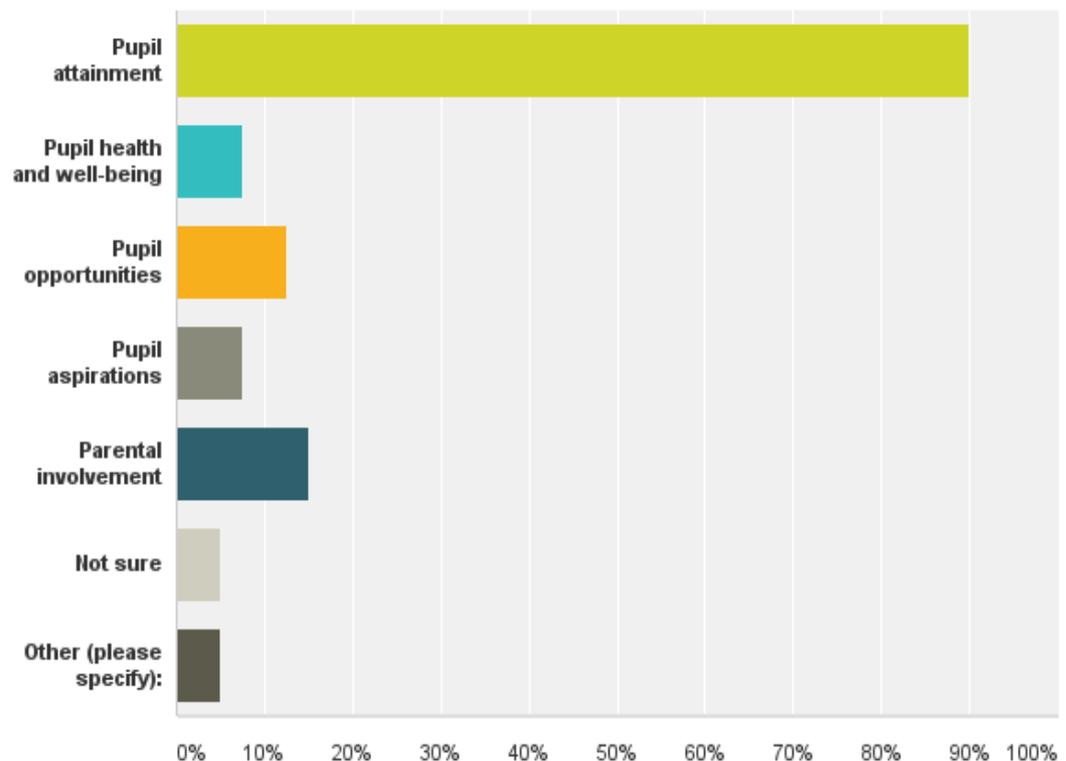


Figure 4: Cluain partnership: Survey question 10

In the Abhainn partnership, 96% of the respondents chose inequities in pupil attainment as a purpose of their partnership. Like the Cluain partnership, this too suggests that the educational professionals of this partnership were in agreement regarding the shared purpose and aspirations of their collaborative work. The fact that so many respondents chose pupil attainment also suggests that the priorities stated by the funding body (Education Scotland) were likely to have shaped both the individual and collective goals of the partnerships. 30% of the respondents also included parental involvement as a purpose

of their partnership. The one participant who did not answer pupil attainment left this question blank.

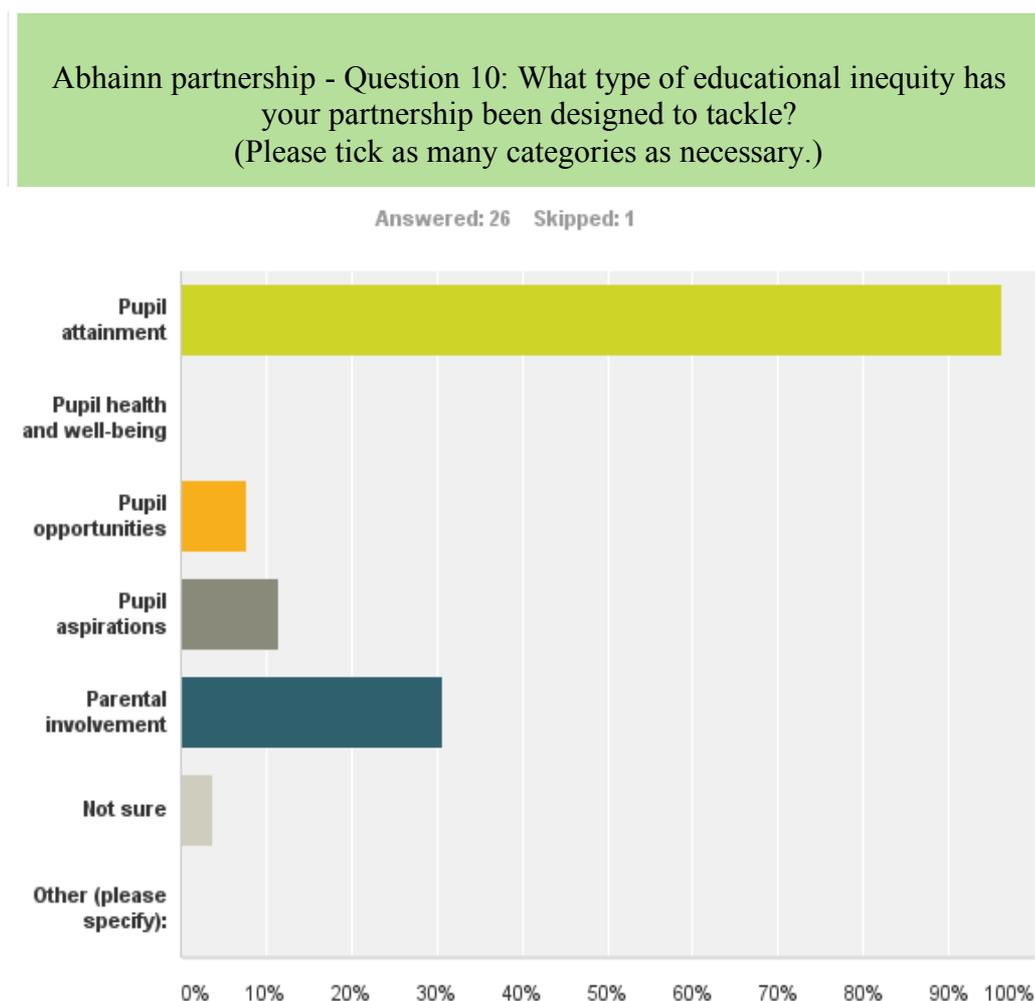


Figure 5: Abhainn partnership survey question 10

The following question (figure 6) asked participants about the factors contributing to educational inequity in their context. Possible factors to choose from included the following list of answers.

Educational inequity in our school is a result of:

- pupils' socioeconomic backgrounds
- pupils' family circumstances
- pupils and/or parents learning English as an additional language
- pupils' additional support needs
- insufficient and/or inadequate school resources
- competition between schools or local authorities
- an emphasis on assessment or examination results

Cluain partnership - Question 11: Thinking about the factors which contribute to educational inequity in your context, please indicate the extent to which you agree with the following statements. (Tick one box on each line.)

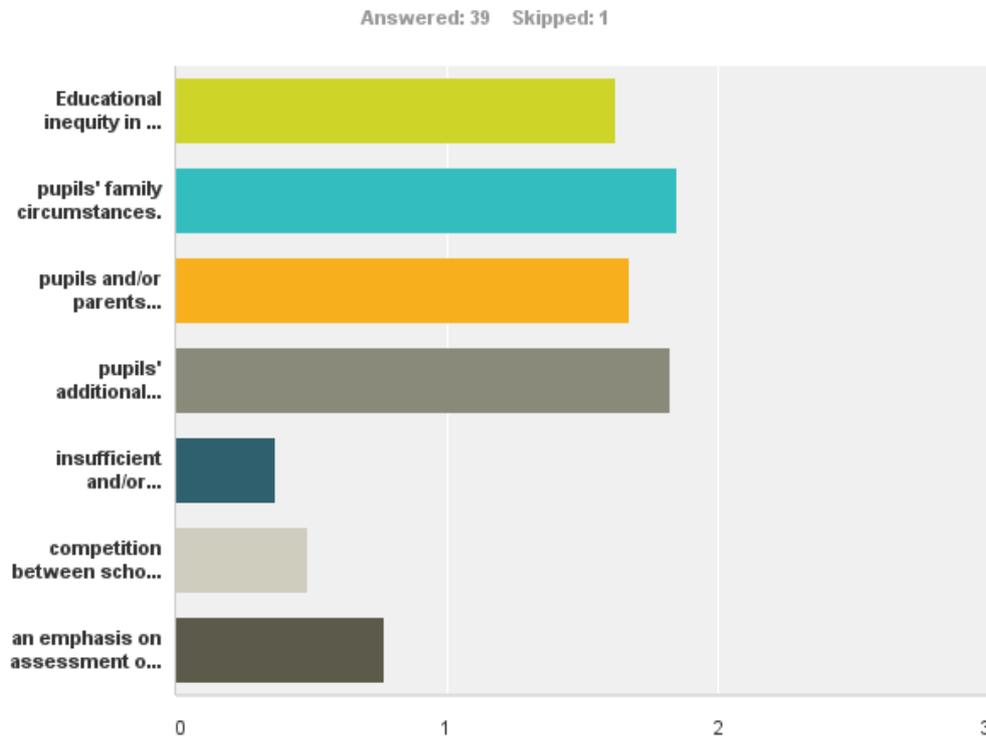


Figure 6: Cluain partnership survey question 11

The horizontal axis has a weighted average in which the higher the value the higher the number of respondents answered 'to a large extent' or 'to some extent'. These results demonstrate that most educational professionals chose the first four factors (socioeconomics, family circumstances, language or support needs) as factors that contribute towards educational inequity in their context. Fewer than 25% of respondents chose school resources or competition between schools as a contributing factor. The most contentious factor was the emphasis placed on assessment or examination results. 51% stated that emphasis on assessment or examination results is a factor that contributes to educational inequity, whereas 46% of respondents stated that it is not a factor, and 3% said they don't know.

In the Abhainn partnership the results were similar. Most educational professionals chose the first five factors (socioeconomic background, family circumstances, language or

support needs, inadequate school resources) as factors that contribute towards educational inequity in their context. The slight difference between these results and those from the Cluain partnership was that 64% of the respondents chose insufficient and/or inadequate school resources as a contributing factor to educational inequity. This partnership's responses had a greater emphasis on resources when compared to the Cluain partnership, and it was serving areas with higher levels of deprivation as reported by the SIMD. Like the Cluain partnership, the most contentious factor was the emphasis placed on assessment or examination results. 52% of the respondents stated that an emphasis on assessment or examination results is a factor, whereas 48% of respondents stated that it is not a factor.

Abhainn partnership - Question 11: Thinking about the factors which contribute to educational inequity in your context, please indicate the extent to which you agree with the following statements.
(Tick one box on each line.)

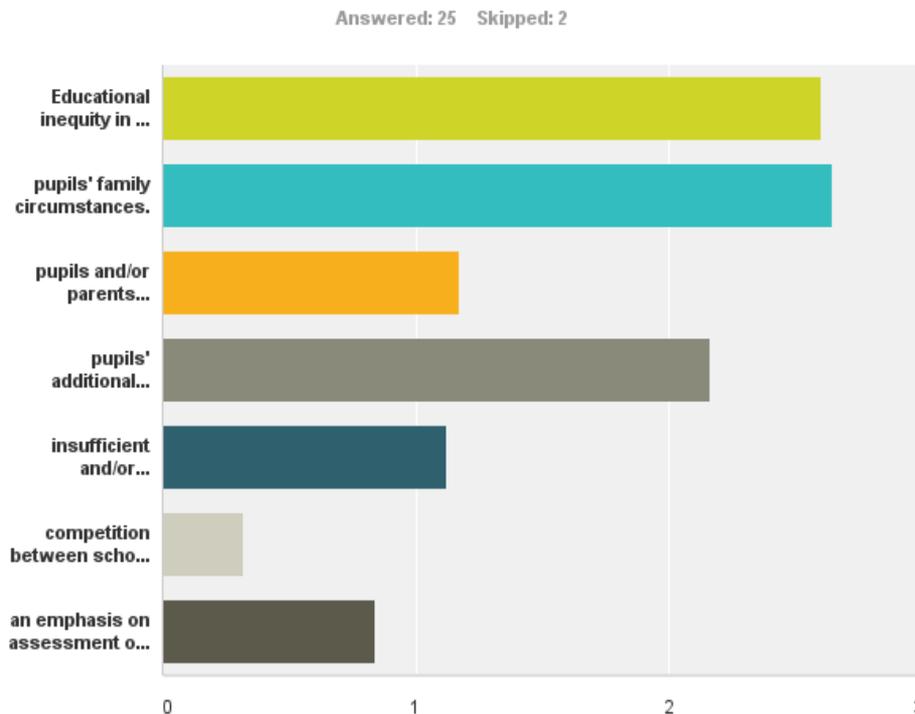


Figure 7: Abhainn partnership survey question 11

In order to determine whether educational professionals' understandings of inequity were shared within individuals' own professional groups, the numbers of inequity discussion relations within and between groups were compared using data from the final SNA question of the survey. This final question asked participants with whom they discuss educational inequity. From the answers to this question numbers of external and internal ties were used to calculate the E-I Index.

The E-I index (Krackhardt and Stern 1988) was calculated to explore the effect of affiliation (to a school, a local authority, a position or number of years of teaching experience) on discussions between educational professionals. Given the partition of a network into a number of mutually exclusive groups (school, local authority, or years of teaching experience) the E-I index evaluates the relation between external and internal exchanges, i.e., the tendency for educational professionals to relate to others who are similar to themselves.

The first comparison is between the two schools in the Cluain partnership.

	Number of internal relations within the professional group	Number of external relations to others groups	Total number of relations	E-I Index
Pink school	44.000	19.000	63.000	-0.397
Blue school	67.000	10.000	77.000	-0.740

Table 15: Cluain partnership E-I index for schools regarding inequity

Both of the schools in the Cluain partnership had more internal than external relations and the E-I index was a negative value suggesting educational professionals from both the pink and blue schools of the Cluain partnership tended to have a higher ratio of internal exchanges with professionals from their own school compared to external exchanges with the other school. Combining these findings with the questionnaire data suggests educational professionals within their own schools engaged in conversations regarding educational inequity with one another and tended to agree on the aspects of educational

inequity that their partnership sought to address. The propensity for professionals from both of these partnerships to take part in a lesser number of external exchanges regarding educational inequity is also evident by examining a map of the network.

The network map or sociogram was constructed by asking educational professionals the following question: With whom have you discussed educational inequity? Each participant who completed the survey was able to choose as many people as they wished from a list of known partnership members. Using the responses to this question the sociogram was constructed using the software UCINET 6.0 (Borgattii, Everett and Freeman 2002). Participants who completed the questionnaire were coded by replacing their names with numbers. On the sociogram there are numbered circles, squares and triangles. Each shape represents an educational professional. When two of the shapes are connected with an arrow it means at least one of these individuals reported sharing a discussion regarding inequity (Figure 8).

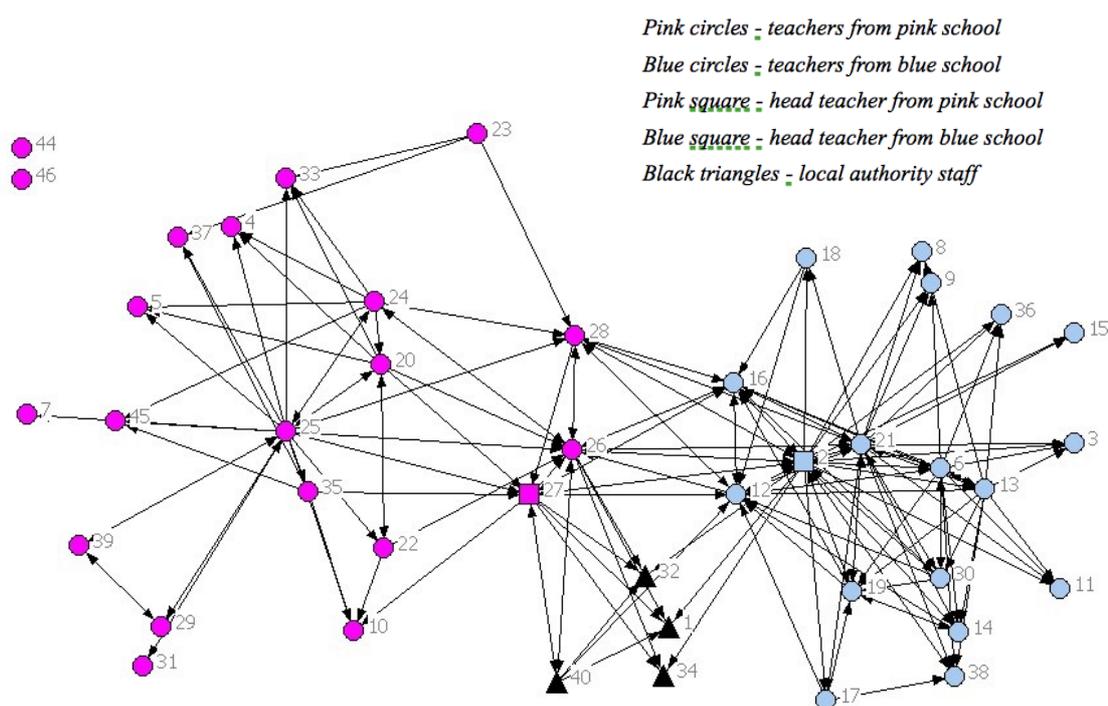


Figure 8: Sociogram of Cluain partnership discussions regarding inequity (first timepoint)

Each pink circle represents a teacher from one of the primary schools and each blue circle represents a teacher from the other primary school. A square represents a headteacher and

triangles represent local authority officers. All of the pink circles and squares are from the same school and all of the blue nodes are from a different school. The two lone pink dots at the top left of the figure (44 and 46) are isolates. These teachers did not report having discussions regarding educational inequity with anyone nor did anyone else in the network report having discussions with them.

From the sociogram (Figure 8) it is evident that there are more lines between blue and blue educational professionals than between pink and blue educational professionals. This supports the E-I index findings from above suggesting educational professionals from the same school are having more discussions with one another than they are with people from the other school.

A further comparison can be made by dividing the participants according to their position as a local authority officer, headteacher or teacher. These differences are evident on the sociogram by noting the lines between the differently shaped nodes. For example, triangles represent local authority officers who have only a few lines connecting them to one another. This suggests local authority officers had more conversations about inequity with headteachers and teachers than they did with each other. This is supported by the E-I index values in table 17.

	Number of internal relations within the professional group	Number of external relations to others groups	Total number of relations	E-I Index
Local authority officers (black triangles)	2.000	14.000	16.000	0.750
Head teachers (squares)	1.000	31.000	32.000	0.938
Teachers (circles)	32.000	99.000	131	0.511

Table 16: Cluain partnership E-I index by position for discussions regarding inequity

These positive E-I index values suggest educational professionals had more discussions with those who did not hold the same position as they did. For example, local authority officers were more likely to discuss educational inequity with either teachers or headteachers rather than with another local authority officer. Similarly, headteachers were more likely to discuss educational inequity with a local authority officer or a teacher rather than another headteacher. Teachers had the smallest E-I index values, but these were still large enough to indicate that they also had a number of their conversations with headteachers and local authority officers. (It should be noted that the very small numbers of local authority officers and headteachers involved makes it much more likely for the majority of their relations to be external resulting in very high E-I indexes.) In general, these positive E-I indices suggest that conversations regarding educational inequity were not confined to a clique, but were circulated among all positions. This may suggest another reason why over 50% of the respondents were in agreement regarding survey questions 10 and 11.

Disagreement among experience groups

Dividing the participants according to years of teaching experience yielded a different set of E-I Indexes. Participants were divided into three categories based on years of experience: 0-5 years of teaching experience; 6-15 years of experience; 16 or more years of experience.

	Cluain partnership	Ahbainn partnership
0 - 5 years teaching experience	0.600	0.704
6 - 15 years teaching experience	0.595	0.221
16 or more years teaching experience	0.048	0.105

Table 17: E-I index by experience regarding inequity

The difference between the E-I values based on years of experience suggests educational professionals in the category defined by 16 or more years of teaching experience had a

smaller E-I index than those with fewer than 16 years of experience meaning those with more than 16 years of experience tended to have almost the same number of internal as external exchanges; whereas those with fewer than 16 years of experience had a higher number of external exchanges. Combining these findings with the questionnaire data suggests that educational professionals with more years of teaching experience engaged in more conversations regarding educational inequity with one another than other experience groups. It is interesting to note that it was this same group of educational professionals (16+ years teaching experience) who gave different answers when asked about the purpose of their partnership. Despite the Cluain partnership appearing to be very unified regarding shared purpose and understandings of inequity, there seems to be some variation in the beliefs of the group that demonstrated more closure. This group (educational professionals with 16+ years of teaching experience) had fewer discussions with those outside of their group when compared to other experience categories. Those with 16 or more years of experience also demonstrated different views of the purpose of their collaborative activity. Interestingly, this was not unique to the Cluain partnership. The Abhainn partnership revealed a similar pattern (Table 17). These findings are similar to the Cluain partnership since the least experienced group (0-5 years), was also the group with the highest E-I index suggesting a propensity towards discussions with people from other experience categories. The most experienced group (16+ years) had a smaller E-I index suggesting less of a propensity towards discussions with people from other experience categories. Combining these findings with similar findings for the Cluain partnership and the questionnaire data suggests educational professionals with more than 16 years of teaching experience operated as a more insular group when compared to the other experience groups. Further evidence of this division was provided in the interviews. One of the teachers from the Abhainn partnership who had between one and five years of teaching experience made the following comment about teachers with more experience:

And some of the kind of older members of staff here were a wee bit apprehensive about the whole new approach. It was nice to be able to say this is exactly what the PIs [primary one pupils] are doing over there and reassure them that what we were doing was the right thing. (Caitlin, Abhainn partnership)

Caitlin suggested that presenting evidence of the success of the initiative was a means of reassuring a colleague. In contrast, Alasdair explains that he has found the sharing of evidence is not always enough:

...some people hold views and even if there's evidence they won't change because their views become entrenched.... So at times it was just trying to put the approach across and just accepting people for who they were. (Alasdair, Cluain partnership)

This educational professional who also had less than 16 years of experience suggests that presenting evidence to convince others of the effectiveness of the new initiative is not always a successful approach to bridging ties. His comments also suggest that for those whose views have become ‘entrenched’ there may not be sufficient motivation to risk trying an alternative. The motivation behind a participant’s involvement, or level of involvement, is an issue that became apparent in both partnerships.

Motivation

One educational professional stated raising attainment as a pre-determined purpose of the partnership that needed to be adhered to:

[I]n terms of the individual projects that emerged they were aligned with that overarching objective [raising attainment] that we were very rigorous about ensuring it was adhered to. There’s the promotion of the agenda to raise attainment... What we’re saying is how we’ve raised attainment, but maybe not necessarily explicit enough in tackling inequity. (Dorcas, Abhainn partnership)

This educational professional was clear about her role to ensure all participants in the partnership adhered to a pre-determined purpose of the partnership: to raise attainment. This purpose was established early on in the SIPP programme by the funding body (Education Scotland), but it was emphasised within the partnerships in varying degrees. From the quotation above it is evident that this educational professional from the Abhainn partnership took it on as part of their role to enforce this purpose. At the same time, the quotation finishes with an acknowledgement that the vision of raising attainment and the goal of tackling inequity may not necessarily be the same thing. The vision of raising attainment was at times overshadowed by an altruistic motivation to provide for the needs of the children in these disadvantaged areas.

[Y]ou could quite easily see how for many of the children there were issues around their educational attainment, family circumstance of where they grew up and also around their peer groups. And therefore I was quite keen when I came into teaching to try and make a difference to try and improve that. (Alasdair, Cluain partnership)

Once you’re on the journey teachers see children as children. They lose that inequality of, well you come from a poorer background. They’re all the same in the class...[It’s] about allowing and empowering the child to overcome the barriers or breaking those barriers down because that’s really, really important...It’s passion. All you need. Because this will make a difference. (Magaidh, Abhainn partnership)

Both of these teachers alluded to a motivation and a passion fueled by ethical and moral principles rather than a prescribed purpose.

Summary

This section set out to provide evidence regarding the significance of a partnership's collective values as a contributing factor to the efficacy of the partnership. Questionnaire and SNA data suggest that the majority of participants held collective values for their partnership. Transcript data reveal participants' beliefs regarding the benefits of developing shared goals. Commitment, cohesion and sustainability were named as outcomes experienced by networked members who felt connected to one another through shared aims, values and aspirations. The establishment of collective aims and values appears to have been fostered through discussions regarding educational inequity which were mapped using SNA data. The data suggested most of the groups maintained agreed aims with the exception of educational professionals with more than 16 years of teaching experience. Although many participants shared common aims for their partnership, transcript data suggested participants had different motivations for pursuing the collective aims. Together the data revealed establishing agreed aims and values appeared to contribute to the efficacy of the partnerships, but differences in motivation may have impacted their sustainability.

Research question 1 (b)

To what extent did the School Improvement Partnership Programme facilitate the construction of new approaches to support the tackling of educational inequity?

Soon after the partnerships were initiated it was clear that teachers involved in the partnerships were selecting and implementing new strategies for teaching and a new strategy for professional development. What was more difficult to discern was whether or not these new endeavours supported the tackling of educational inequity for the pupils who had been initially targeted and to what extent participation in the partnerships facilitated the development of the new strategies. To evaluate the impact of the partnerships on the construction of new and equitable approaches various types of data were analysed: transcripts from teacher interviews and focus groups; transcripts from pupil focus groups; and social network analysis data. Evidence was found to suggest that the new methods did create the potential for pupils to experience increased freedom and capabilities thereby providing more equitable classroom opportunities. The data also suggested that the partnerships were instrumental in supporting the teachers to try these new methods. Strategies to overcome blockages to the development of these new approaches were also

observed. Data regarding these blockages and associated strategies are mentioned in later sections.

Prior to selecting new teaching approaches, educational professionals in both partnerships spent time discerning which groups of pupils had the greatest educational needs.

Teachers, headteachers and local authority officers in the Cluain partnership spent time examining assessment data and looking for gaps in achievement. In the Cluain partnership one of the schools was below its three year average target in mathematics, but the other wasn't. For the school below its target in mathematics, local authority representatives and headteachers noted a decrease in boys' attainment. They also noted higher attainment in pupils from a White-Scottish background; however, in the year before the partnership was launched there were higher results than expected in mathematics for ethnic minority pupils at the Primary 7 stage. Both schools had similar primary 5 classes with a number of pupils with English as an additional language and/or some behavioural challenges. As these schools looked for an approach to teaching problem-solving in maths to pupils who may find the language component of problem solving a challenge, one of the teachers was introduced to Cognitively Guided Instruction (CGI) while taking a post graduate course at a university. This teacher told other teachers about CGI and subsequently both schools in the Cluain partnership decided to research this approach. Eventually both schools implemented it in their primary 5 classrooms.

In the Abhainn partnership, local authority officers selected schools in the most deprived catchment areas, according to SIMD, to be involved in the partnership. 16 schools were initially selected. 13 schools continued to be involved throughout the funding period. These 13 schools were subdivided into smaller groups of three or four schools. Within these subgroups some of the educational professionals chose to focus on mathematics, while others chose to focus on reading. Before choosing and implementing new approaches time was spent examining attainment data for gaps. These data were used to guide educational professionals as they considered which new approaches to try. Once Reciprocal Reading and CGI had been chosen teachers targeted specific pupils who had been identified as part of the target group, such as those living in the most deprived areas and achieving below their peers. According to the classroom teachers and headteachers, target group pupils were not being treated differently. Several teachers stated that the entire class benefited from the new initiatives.

I do have questions about the closing the gap issue because we did target, for our research, a certain group of children, but it did help all children. I did feel that it did raise attainment, but what it did to close the gap I'm not sure. And I think whatever you do to raise attainment it will help all children because you would expect the children who are already achieving to achieve even more. (Isla, Abhainn partnership)

The focus has still been to track those boys who are minority learners but it's had an impact across the whole group because we've used the same strategies across the whole group of pupils and we have found it's had a huge impact on their learning and their confidence in mathematics. (Morvyth, Cluain partnership)

I think the poverty is almost irrelevant because it's raising attainment for all.... And if you raise them up, you have to raise them up as well because that's good teaching. (Una, Abhainn partnership)

[Q]uite quickly it became apparent that it would be unfair to allow the girls who have English as their first language not to participate. So, it seemed to be fair to make sure that everyone was able to participate to raise attainment and we talk about closing the gap but also to allow them to feel more confident in their maths. And then to start to link in their parents. (Alasdair, Cluain partnership)

I think the approach we used actually benefited all children. (Deirdre, Cluain partnership)

It definitely evolved from initially being specifically about gender and boys to then coming to be about motivation. (Mhairi, Cluain partnership)

We've identified these children, we've probably identified the barriers to learning. Right ok. We know about them. Let's overcome them. And then it's not the focal point that they come from a poorer background and that they come from a less advantaged situation. (Magaidh, Abhainn partnership)

These quotations demonstrate the spread of the innovative approaches to entire classrooms in both partnerships. All children in each class experienced the changes that resulted from teachers' participation in SIPP. Instead of having a small target group of pupils involved, entire classes were involved. This meant there weren't any groups of pupils available to be identified as control groups.

The changes that were implemented by teachers included two new teaching approaches and one new professional development approach. Cognitively Guided Instruction in mathematics was used in all schools in the Cluain partnership and in some schools in the Abhainn partnership. Reciprocal Reading was used by the remaining schools in the Abhainn partnership. Lesson Study is a professional development approach that was introduced in both partnerships. Lesson Study, Reciprocal Reading and Cognitively Guided Instruction are each described briefly before explaining the impact of each approach on the conversion of resources into capabilities.

Cognitively Guided Instruction

Cognitively Guided Instruction (CGI) is an initiative initially chosen by teachers in the Cluain partnership who were looking for an approach suitable for diverse groups of learners including both boys and girls, and ethnic minorities. After the participants in Cluain shared their experiences of using Cognitively Guided Instruction at a national SIPP event this approach was adapted by a number of schools in the Abhainn partnership.

Cognitively Guided Instruction uses a constructivist approach allowing pupils to build on their informal mathematical knowledge and intuition. This approach was developed by a team of educators in Wisconsin, USA, in the late 1980s and early 1990s (Carpenter 1999). A professor at Strathclyde University introduced one of the teachers in the Cluain partnership to this approach. This teacher proceeded to share their knowledge of CGI with the rest of the participants in the partnership. Funds were spent on books and courses to provide opportunities for the teachers to learn more about CGI.

Cognitively Guided Instruction is an approach in which a teacher focuses on a child's understanding of the mathematical thinking that the child brings to the context of mathematical problem solving (Moscardini 2014). Pupils are provided with the freedom to devise solution strategies rather than relying on a teacher to determine an algorithm to be used. The choices made by pupils inform their teacher thereby creating a dynamic learning environment where pupils and teachers are learning together.

Teachers in the Cluain partnership shared their initial impressions of introducing Cognitively Guided Instruction into their practice. In April of 2014 teachers stated that pupils were choosing more challenging questions, relying less on algorithms, and displaying an increased ability to explain their thinking either orally or in writing. One of the pupils described himself as a 'pioneer in maths'.

In November of 2014 teachers in the Abhainn partnership also shared their thoughts after implementing Cognitively Guided Instruction.

[Our project] has completely changed the way I think about teaching altogether just because of the CGI method and absolutely changed the way that I teach maths and my whole beliefs about the way that maths is taught and going on to uni to find out more about. That is something that I just didn't think I would be interested in doing. So it's good. It's really motivated me and inspired me in my teaching which has been good.
(Isla, Abhainn partnership)

This way of doing children's mathematics that starts to close your inequity gap and starts to get a rich understanding of number. It's not teacher led. I think those were the key points for me. (Alasdair, Cluain partnership)

I never thought pupils would look forward to problem solving. (Morag, Abhainn partnership)

One of the teachers reported that her pupils had been able to produce four different solutions to one question providing further evidence of the extent to which pupils had moved away from relying on a single method prescribed by a teacher.

The following quotations suggest the increased degree of freedom experienced by the pupils.

I think it's pretty different from what we would do normally because you're not restricted to methods that you use. It's not like they say oh you have to do this one. Having variations of methods that you can use really helps. (pupil, Cluain partnership)

I find it a lot easier because instead of having one set method to do it you have a variation: you could use your own method; you could use a method someone else has shown you. It's more like a sense of freedom for your maths and I enjoy it a lot more now than I did a few years ago. (pupil, Cluain partnership)

It does give you more freedom and there's different ways of working it out so you can have your own way that suits you and you don't have to stick to that one way. (pupil, Cluain partnership)

Before I did this [approach] if people asked me how I got an answer I didn't know. But since I've been doing it with this I can go back to the problem, look at the way I did it, the method, and I can tell them. (pupil, Cluain partnership)

I find it easier as well because you don't need to do it one way. You can draw or try that. (pupil, Cluain partnership)

It's easier for me now because Miss said you can use different variations and you can use different ones to back up your first answer. (pupil, Cluain partnership)

I find it much easier because you can use more than one method. I also find it easier because you can draw things out. Before I would always just think about it and struggle and get frustrated, but now I find it much easier to draw it out and it just helps me. (pupil, Cluain partnership)

The teacher for questions about time for adding minutes and hours she does it different and I do it different and other people do it different and she lets us do it our way. It feels easier. (pupil, Cluain partnership)

In addition to having more freedom regarding the methods to use for maths word problems the pupils also mentioned more choice in the level of difficulty of the maths word problem.

In some questions there are different sets of numbers to choose from.... I usually choose the challenge because I like it. (pupil, Cluain partnership)

As a result of increased freedom pupils had more than one capability to choose from when solving a maths word problem. The process of solving a maths word problem begins with the introduction of a resource, such as a maths word problem and converting this resource into capabilities requires the involvement of personal, social and environmental conversion factors. These factors can either foster or hinder the conversion of resources into opportunities. Personal conversion factors might include a pupil's knowledge, understanding or experience. Social conversion factors have the potential to positively or negatively influence social norms, practices and relationships such as cooperation, discussions, attitude towards difference, bureaucratic systems, rules, hierarchies, competitiveness, and assessment requirements. Environmental conversion factors are related to the physical space and might include, for example, room temperature or size of the classroom. Depending on these conversion factors the maths problem to be solved may or may not be converted into a number of capabilities. From the pupils' quotations it is evident that pupils who are quoted were provided with conversion factors such as the freedom to choose a method, the level of difficulty, resources to use, permission to act autonomously or to choose to act interdependently. Capabilities in this context include the freedom to choose which method to use to solve a maths word problem and the freedom to participate in a community by creating a maths method with a peer or a teacher. The final step in this process was the achievement of solving the maths problem using a chosen capability.

Resource	Social conversion factors	Capability set	Functioning
A suitable math word problem to be solved	Social norms such as: <ul style="list-style-type: none"> • relationships between educational professionals, teachers and pupils • school and classroom climate encouraging/discouraging cooperation, competitiveness, acceptance of difference or tendency for ridicule • assessment procedures 	Set of possible methods to choose from: <ul style="list-style-type: none"> • a method or algorithm prescribed or demonstrated by teacher • an independently devised method to use • a method co-created with peers • a method found from some other source such as YouTube, a parent, etc. 	Solving a math word problem using a chosen capability

Table 18: The capability approach applied to the solving of a maths word problem

According to the capability approach evidence of the degree of equity is not merely based on whether or not an individual achieves. For example, the focus is not only on whether or not a pupil solves a maths word problem or how many pupils solve maths word problems. The main focus is on how much choice or freedom a pupil has during the process of solving the maths word problem.

The observed changes in the degree of freedom provided in the mathematics classrooms were similar to the changes observed in the classrooms where a new reading initiative was introduced. Reciprocal Reading was introduced to the majority of the schools in the Abhainn partnership.

Reciprocal Reading

Reciprocal reading, like Cognitively Guided Instruction, is a social constructivist approach. The teaching role is shared between the teacher and the pupils who take turns leading the discussion. Reciprocal reading was initially introduced in the United States by Palinscar and Brown (1984) to assist ‘poor comprehenders’. Using the procedure of reciprocal reading a teacher models the trained skills of summarising, questioning, clarifying and predicting before pupils do the same for one another. In this way it involves

...an adult model guiding the student to interact with the text in more sophisticated ways (Palinscar and Brown, 1984: 117).

Teachers in the Abhainn partnership who were using reciprocal reading in their classrooms shared the following comments in November 2014,

I feel like a new teacher. (Catriona, Abhainn partnership)

I'm not totally confident yet, but more informed and more enthusiastic. (Gillian, Abhainn partnership)

In addition to teachers’ experiences of implementing new teaching approaches the degree to which it provided the potential to increase educational equity was also examined. The capability approach was used to evaluate the potential use of reciprocal reading to increase equity. Using the capability approach the process of reading can be deconstructed into a number of processes beginning with the introduction of a resource such as a work of fiction or non-fiction. For primary school children in this study an example of an achievement or functioning in reading was the comprehension of a text chosen and valued by the child, or the deciphering of an unknown word using a strategy chosen by the child. The focus of an evaluation from the perspective of the capability approach is not on the

reading and comprehension alone, but also includes the degree of choice available to the child. The set of possible choices available to the pupil included the freedom to choose the text; freedom to choose assistance from peers, teacher, or resources; freedom to participate in activities such as summarising, questioning, clarifying or predicting to increase comprehension. An educational professional from the Abhainn partnership explained their approach to reciprocal reading,

[O]ur angle on it [reciprocal reading] was more about personalisation and choice.
(Una, Abhainn partnership)

Increased personalisation and choice was mentioned by both educational professionals and pupils. Pupils in the Abhainn partnership described situations in which Reciprocal Reading afforded them increased freedom to choose from a variety of strategies:

Because if you don't know what a word means you can be like asking your friend, looking in the dictionary, using the words around it to see if it makes any sense or replacing it with a word that's similar to see if that's what you're thinking of. (pupil, Abhainn partnership)

You get to talk with people about what you've summarised and clarified and predicted and questioned and then they get to look in the book and they get to tell you their summary and stuff. (pupil, Abhainn partnership)

Both pupil and educational professional descriptions of their experiences of Reciprocal Reading suggest that this new approach increased the set of capabilities a pupil had to choose from. Pupils were able to choose from a variety of strategies to find the meaning of a word or to find the meaning of a passage. In this way pupils were afforded a greater degree of freedom and choice.

In the Abhainn partnership this approach to reading was also used in a specialised class for pupils on the autistic spectrum where it was found to be just as effective. Caitriona explained how she was able to learn from her colleagues who were using Reciprocal Reading in mainstream classes and adapt it to use with her pupils.

Resources	Conversion Factors	Capability Set	Functioning
Written material (fiction or non-fiction) to choose from	<p>Social conversion factors:</p> <ul style="list-style-type: none"> relationships between educational professionals, teachers and pupils school and classroom climate encouraging/discouraging cooperation, competitiveness, acceptance of difference or tendency for ridicule assessment procedures <p>Personal conversion factors:</p> <ul style="list-style-type: none"> learner's intelligence, previous knowledge, understanding or experience <p>Environmental conversion factors:</p> <ul style="list-style-type: none"> warm, dry, safe, comfortable space large enough to work either independently and cooperatively 	<p>Set of possible choices:</p> <ul style="list-style-type: none"> freedom to choose which text to read freedom to choose assistance from peers, teacher, or resources during the processes of deciphering and comprehending freedom to participate in activities such as summarising, questioning, clarifying or predicting to increase comprehension 	Reading and comprehending a text

Table 19: Application of the capability approach to reading

In addition to Reciprocal Reading and CGI another new approach resulted from the partnership project.

Lesson study

When educational professionals in the Cluain partnership were looking for a means of gathering detailed data regarding the efficacy of CGI, a professor from the Robert Owen Centre for Educational Change, University of Glasgow suggested Lesson Study as a possible approach. Teachers from the Cluain partnership received some training in Lesson Study from the Robert Owen Centre and began using it in the spring of 2014. This knowledge was shared with educational professionals in Abhainn who had also begun to use Lesson Study.

A headteacher in the Cluain partnership shared her observations of the process of Lesson Study:

They [teachers] were actually coming together and planning together and then carrying out the Lesson Study and it meant they had really robust evidence for what was happening and what wasn't happening and giving them the responsibility for that and not feeling that they were being told what to do because I think in the past I would feel like I need to tell them what to do. (Morvyth, Cluain partnership)

This headteacher's description of Lesson Study suggests it was an approach to professional development that permitted teachers to act more autonomously. Teachers had the freedom to make choices related to planning, inquiring and researching. This new approach increased the set of capabilities from which teachers could choose.

Lesson Study [is] very much teacher led, very much about inquiry, knowledge and building on that knowledge. (Alasdair, Cluain partnership)

I tell the children mistakes are something to learn from, but when I make one, I feel as though I'm not very good at my job ... And I think that's what this project gave the people involved. You no longer had that fear of I'm either good or I'm not good. You had the building blocks. This was good. I would have done this differently. You didn't get defensive. You were actually interested so, "What did you see that I didn't see?" Right ok I'm going to try that then. I never realised. You lost that sensitivity towards your practice. Don't get me wrong I don't want you to open the doors and let everybody come in and watch me teach. (Moire, Abhainn partnership)

You started to think of these people as being almost your scaffolder. They would support you and tell you what was good, but they'd also provide you with steps that you need to take, that maybe someone in house might not want to say to you because you've got a social aspect there. So I think that is was really good. (Moire, Abhainn partnership)

Lesson Study, Reciprocal Reading and CGI were new approaches that afforded a greater degree of freedom and choice to both educational professionals and pupils. Evaluating the

support which enabled these new approaches to offer equitable opportunities requires a consideration of the social conversion factors. The main conversion factors observed included:

- social norms (Research questions 1 a, b)
- classroom, school or system climate (Research question 1b)
- assessment procedures (Research question 1c)
- bridging and bonding capital (Research question 2)

Conversion factors have the potential to either foster or challenge the conversion of resources into capabilities. The impact of these conversion factors on pupils and educational professionals is discussed below.

Social norms: Collective values, power and relations

Collective values shared within partnerships provided a foundation of support and commitment to sustain the interest and trust of educational professionals. This was described in research question 1(a).

Another social norm that appeared to have an impact on the partnerships was power. Power structures underwent changes as a result of the partnership work. This was evident in statements made in interviews and focus groups by a number of educational professionals including the teacher below.

Everyone was seen as equals which I've never experienced that before. I was working with headteachers and QIOs [Local Authority Quality Improvement Officers] and your opinion was just as valued as theirs ...The honesty enabled [me] to say, 'That didn't work for me. I don't know how to do that. I'm not confident with this.' (Isla, Abhainn partnership)

This flattening of hierarchies seemed to go hand in hand with a willingness to reveal weakness. This teacher explained how the change in power was accompanied by a willingness to become vulnerable by sharing what she didn't understand.

[G]iving teachers the flexibility and the freedom to experiment knowing that if it's coming from practitioners in the classroom and giving them the chance to taste new approaches to test something that's never been done before rather than being told to test to it. What's worked is the fact we were very much given the freedom to see a method and to change perceptions of maths. (Mhairi, Cluain partnership)

In addition to the data from interviews and focus groups, the social network analysis data also demonstrated the disruption of the hierarchical structures. Figure 9 shows a sociogram for the Cluain partnership in which several people are positioned centrally rather than a single individual.

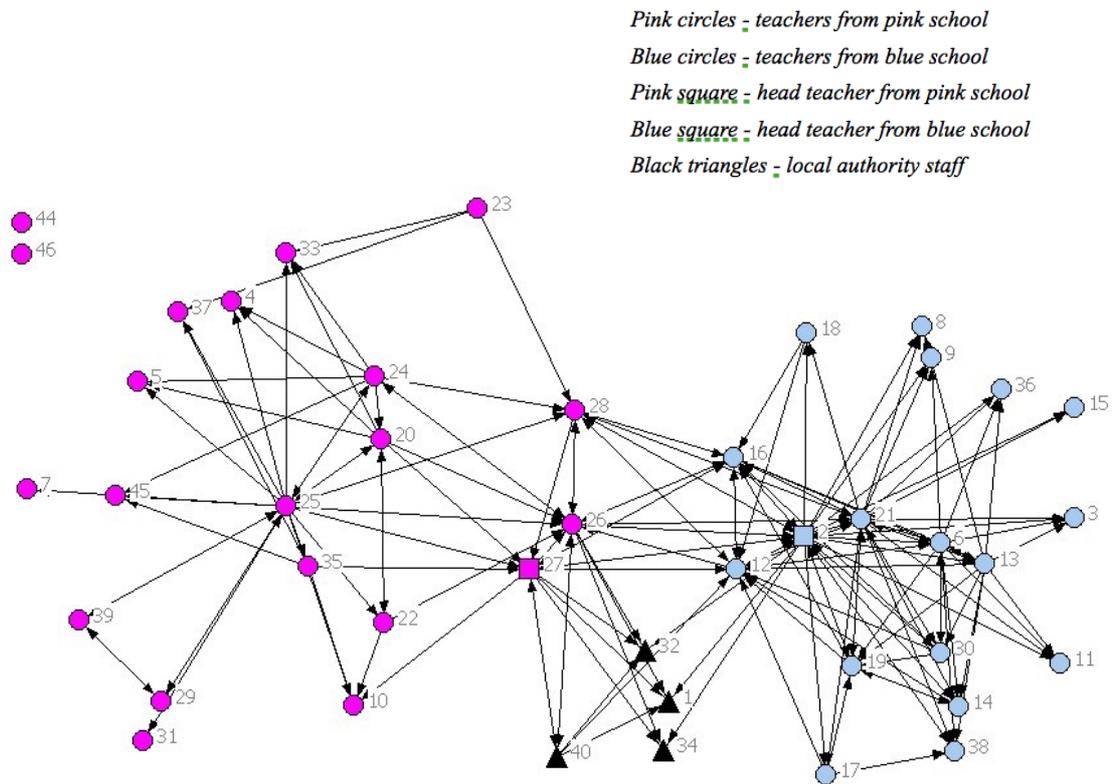


Figure 9: Cluain partnership discussions regarding inequity (first timepoint)

In addition, none of the local authority officers are positioned centrally. This suggests that established power structures based on employment position or years of experience became irrelevant as teachers took on leadership roles within these partnerships. Previous research by Drew et al. (2016) suggests that collaboration between educational professionals (and especially collaborative inquiry as was used in this project) can result in the flattening of existing hierarchies.

Despite the prominent role of teachers in both schools, it is also important to note that two of the pink circles in Figure 9 (44 and 46) represent teachers who were not involved in any discussions regarding educational inequity. Could anything have been done differently to ensure full participation of all teachers?

Classroom, school and system climate

After the teachers became involved in this initiative and funded to take part in collaborative work and relationships, they began to choose opportunities for their students to have similar experiences. Approaches such as CGI or Reciprocal Reading encourage

pupils to collaborate with one another and their teachers. Both CGI and Reciprocal Reading involved a change in the power structure within the classroom as described by a pupil from the Cluain partnership.

It's a lot more fun because you're being the teacher and... when you're showing everyone else you might realise you got it wrong or your classmates might tell you you got it wrong. (pupil, Cluain partnership)

This experience was accompanied by a willingness to forfeit familiar and comfortable positions and instead, as the pupil explained, 'get it wrong' in front of her peers. The pupil mentions how a change in the power structure led to a revealing of one's mistakes. She explained her experience of teaching and being taught by her classmates. Another change in power structure was demonstrated when pupils became teachers and taught a teacher from another local authority about reciprocal reading.

More than one pupil mentioned the benefits of having other people spot your mistakes and then the process of moving on, presumably to learn something new. Participants described the freedom they felt enabling them to engage in conversations they had previously avoided:

You share your ideas and no one will laugh at them. (pupil, Abhainn partnership)

...it's a time when you can talk to your friends and like if people are shy they can just tell their ideas and other people just tell them, 'come on' they don't laugh. (pupil, Abhainn partnership)

This too was experienced by educational professionals:

And when people said, "I don't understand this". Suddenly other people said, "Neither do I!" (Beitris, Abhainn partnership)

... It's really interesting the dialogue that's happening. It's real honesty. "That just did not work in my class." And they're now inviting colleagues to come in and video them. "I need to see why. Why is that child not engaging?" (Magaidh, Abhainn partnership)

I had to say, "I'm really not happy". It turned out that another 8 people said, "I agree with you". (Gillian, Abhainn partnership)

In the following quotation a teacher talks about allowing her pupils to teach another teacher. She explains the teacher's experience of being taught by the pupils.

[O]ne of the ladies came out to me and she watched the introduction, but see after that I sat her with a group of the children so it was no longer about me. It was about, what have they got from this lesson? And she sat back and she watched the conversation between them and she said, "They taught me how to do this. They taught me how to do

your lesson. And they talked me through what they liked about it. And it was such a rich conversation.” (Moire, Abhainn partnership)

Two of the educational professionals provided reasons why they felt a high level of comfort within their partnership.

For the whole thing to work the relationships had to be intact. And then that made you feel even more like classroom monitoring or putting your hand up at a meeting and saying I don't know. And people are only likely to be honest when that relationship is there. They don't feel judged. (Caitriona, Abhainn partnership)

The existence of trusting and non-judgemental relationships, as mentioned by this educational professional, was accompanied by feelings of mutual experience and understanding as explained by the teacher below.

[Y]ou had people in the same boat as you and you weren't scared to say, “That didn't work” Because you weren't scared that somebody was going to come along and say. Well, if it didn't work it's your fault. We were actually just sharing as colleagues, as friends as well. (Moire, Abhainn partnership)

An increased willingness to take risks and reveal weaknesses or gaps in knowledge has been observed in other school-to-school networks as documented in previous research in England (DfES 2005; Ainscow 2016). This existing research suggests this is one of the advantages of collaboration that takes place between schools rather than only within a single school.

Educational professionals and pupils in both the Cluain and Abhainn partnerships described situations in which individuals demonstrated a willingness to take risks or reveal gaps in knowledge.

One teacher suggested that those with different opinions regarding pedagogy should be allowed to “hold those beliefs” (Alasdair, Cluain partnership). This ability to recognise and accept difference was evident in both partnerships:

Every teacher clearly is different in the way they introduce the four strategies ... it was really good to see other people's ideas and slant on it. (Gillian, Abhainn partnership)

Teachers' recognition of different approaches in the classroom appeared to increase freedom among pupils so that they were able to choose their approach to solving a maths problem or their approach to deciphering an unknown word within a text. Viewed through the lens of the capability approach, teachers' recognition and acceptance of difference increased the capabilities of the pupils.

The willingness to take risks such as inviting others into one's classroom after taking time to build trust and confidence was mentioned repeatedly in the interviews and focus groups.

I think we had the time to develop our relationships and to support one another and sometimes that doesn't happen in schools. Sometimes you're trying to move things too quickly. (Alasdair, Cluain partnership)

This in turn led to increased enjoyment and confidence experienced by the pupils:

... because this has been introduced, it has helped me more and it has worked and now it's my favourite subject. (pupil, Cluain partnership)

Now I love reading. (pupil, Abhainn partnership)

The increase in enjoyment and confidence in the subject matter suggests an increase in capabilities.

The classroom, school or system climate supportive of risk taking, acceptance of difference, and an absence of ridicule appeared to be factors able to foster an increase in the capabilities from which individuals could choose.

Conversion of resources into capabilities

Comparing the student and educational professionals' reports of the factors that resulted from the collaboration revealed a number of similarities. Both pupils and educational professionals reported positive changes to power structures, level of trust, willingness to reveal vulnerability and recognition of difference. These positive conversion factors supported the conversion of resources into capabilities such as the freedom to pursue different and valued approaches.

In support of Bell et al. (2003) the partnerships initially targeted only a small group of pupils before expanding the initiative. Educational professionals emphasised the effectiveness of this approach.

One bit of advice would be to keep it really small to begin with and although that's frustrating and that was one of the frustrations at the beginning.... Ours started out with 2 or 3 teachers and a group of 8 or 10 pupils and now we've got the whole school and the nursery and the high school has had some involvement. (Morvyth, Cluain partnership)

I think the first thing is start small and I think that in education you think it has to be with everybody and it has to be implemented right away and I think one of the key strengths with ours is that there was a lot of time spent planning so there was time committed to looking at all the data, gathering data... and knowing that it was ok for it

be one group within one class. It didn't have to be the whole class. It didn't have to be the whole school. It was fine to start small. (Deirdre, Cluain partnership)

Teachers mirroring good practice

It was not anticipated that the teachers who engaged in collaborative inquiry in school-to-school networks would choose new initiatives that would allow their pupils to have similar opportunities to their own. For example, by being involved in school partnership the teachers were investing a lot of time in the development of relationships with their colleagues, building up trust, revealing weaknesses, allowing for differences and sharing ideas. When it came time for the teachers to choose innovative approaches to try with their pupils they chose approaches to teaching maths and reading which would allow their pupils to have similar experiences by collaborating with their peers, developing relationships, revealing weaknesses, and accepting differences.

Summary

These findings reveal that both pupils and educational professionals reported access to positive conversion factors such as changes to relationships. Pupils reported increased opportunities for useful and rigorous dialogue with their peers while teachers reported increased trust and risk-taking among colleagues. Implications from these findings suggest the need for further research to explore possible connections between a teacher's participation in collegial collaboration and their choice to provide similar experiences for their pupils. Gaining a greater understanding of these relational processes will illuminate the support required by pupils, educational professionals and systems to increase collaboration in Scotland's disadvantaged areas for the purpose of increasing student achievement.

The new approaches to tackling educational inequity in maths and reading were very subject-specific prescribed interventions, but they had significant overlap and similarities which included allowances for pupil-led learning by acknowledging and valuing different methods and the autonomy of both pupils and educational professionals. The strengths of these 'new' initiatives did not appear to be their subject-specific applicability, but rather their values-based approaches which facilitated increased autonomy and freedom of choice.

Educational professionals involved in the school partnerships introduced two new pedagogical initiatives (CGI and Reciprocal Reading) and a new professional development

approach (Lesson Study) into their classrooms and schools. In one of the partnerships these strategies were introduced to support the needs of a targeted group of learners who were considered disadvantaged due to the neighbourhood in which they lived (SIMD) and their low attainment in comparison to their peers. In the other partnership pupils were targeted due to their position as ethnic minority boys. Social conversion factors such as changed power structures and non-discriminating school and system climates provided the freedom necessary for targeted pupils, non-targeted pupils and educational professionals to convert resources into valued capabilities. In addition to positive sources of support there were also negative factors providing blockages to the provision of more equitable education. Social conversion factors that inhibited or challenged the conversion of resources into capabilities are discussed in the next section.

Research question 1 (c)

What blockages were present?

Blockages that appeared to inhibit the construction of new approaches and the tackling of educational inequity included lack of resources, lack of time, and clashes between classroom, local authority and national priorities.

Available resources

The barrier mentioned most often by teachers and headteachers was the lack of supply teachers. The impact of providing supply teachers to allow teachers to visit other classrooms during school hours should not be underestimated.

[T]hat was a huge barrier, staffing. And it's a huge barrier still. There are no [supply] teachers out there. (Beitris, Abhainn partnership)

For Lesson Study we planned to do three last year and we only did one because staffing it was really, really difficult. You can make it happen, but you have to make it a priority. And everybody has to believe. (Beitris, Abhainn partnership)

The funding that was there was fantastic, but you can't always match that with the availability of supply cover. (Claire, Abhainn partnership)

[I]t was difficult to get staff to cover. (Cluain partnership, headteacher)

Despite the fact that funding was available to pay for supply cover, educational professionals emphasised the lack of teachers available to satisfy the demand. In some cases headteachers covered classes to enable teachers to participate in Lesson Study.

A resource also in short supply, according to teachers and headteachers, was expertise. Many educational professionals mentioned their lack of experience collecting and analysing data such as the following headteacher.

[C]ollating and interpreting data... As teachers we're not that skilled in doing things like that...lack of skill and lack of time. (Beitris, Abhainn partnership)

In response to this lack of expertise many educational professionals sought assistance from individuals in their local authority such as educational psychologists or assistance outwith their local authority from university researchers.

One educational professional voiced a concern regarding the lack of expertise in the details of the chosen mathematics approach, Cognitively Guided Instruction.

People are saying they're the CGI coordinator for their school and yet they've got no understanding of it. Saying I'm doing this because that's my title and I'm the coordinator. But 'No' because you don't have that knowledge or understanding. That's the biggest danger. I just see it's people who aren't skilled and don't have the knowledge and experience to do it, trying to run it and then later it fails and people say, "Well I did that and it failed so we're never going back to that because I know what it's like". (Alasdair, Cluain partnership)

This concern was not voiced by other educational professionals in either partnership, however, the use of CGI, Reciprocal Reading and Lesson Study did appear to vary between different schools and local authorities. In some cases educational professionals adopted only some aspects of Lesson Study or CGI or Reciprocal Reading. Other educational professionals felt that sufficient time and training were necessary to maintain the integrity of the approach. Some of the educational professionals were taking university courses in preparation for implementing new approaches, while others were learning by going into each other's classes and observing. Those who were taking university courses, such as the teacher quoted above, may have felt that other teachers would benefit from a deeper understanding, although other educational professionals did not mention lack of expertise as a blockage to the success of the partnerships.

Promotion of educational professionals

A number of teachers and headteachers changed positions during the course of the SIPP.

In some cases the reasons for the changes were not made explicit, but it was evident that it had an impact on the partnerships.

[W]e had changes in leadership in one or two of the establishments and that resulted in one of the projects not succeeding and that was also to do with my capacity in terms of time to then be directly involved in it which I couldn't because I just didn't have the capacity because my job changed and therefore I couldn't directly have a hands-on. (Dorcas, Abhainn partnership)

In other cases the reasons for the staffing changes were clearly explained.

There has been a real development in capacity in some of our young teachers and we've now been able to use these younger teachers, less experienced teachers, in a much more leadership role to roll out the programme across other schools and then in the authority. For example, we've now had them speaking at headteachers' conferences. We've got a couple of them now coming out as Raising Attainment advisors. Coming out of school on a secondment basis. There are a range of opportunities available for these young people and as it's progressed they've taken on more of a lead and more ownership of it as it's gone on. (Calum, Abhainn partnership)

The Raising Attainment advisors mentioned here were part of the Scottish Attainment Challenge which was launched by the First Minister in February 2015 (Scottish Government 2017b). The stated purpose of the Attainment Challenge was to achieve “equity in educational outcomes...by ensuring every child has the same opportunity to succeed, with a particular focus on closing the poverty-related attainment gap” (Scottish Government 2017b). This initiative resulted in the secondment of educational professionals to positions outside of their classrooms or schools.

The promotion of these 'younger teachers' was not limited to the Abhainn partnership. There were also teachers and headteachers in Cluain who took on new positions during the course of the SIPP (participants Deirdre, Alasdair, Morvyth and Agnes). These changes were positive in the sense of the professional development of the individuals, yet these changes may also explain some of the gaps that appeared in the second time point sociogram for the Cluain partnership.

Further research is needed to ascertain whether or not the decision of local authorities and the national body to encourage the promotion of individuals to secondment positions such as Raising Attainment Advisors was beneficial to the vision of tackling inequity. These young leaders were instrumental in making changes in classrooms and schools while they were there. Taking them out of classrooms and schools appeared to disrupt the progress

being made. A possible approach, to avoid the disruption, may have been to encourage other teachers, perhaps older teachers or those with more experience, to take over when younger teachers were promoted.

Assessment pressures

The interview and questionnaire responses from educational professionals included mention of external pressures such as assessment procedures. In both of the partnerships over half of the questionnaire respondents chose ‘emphasis on assessment results’ as a factor contributing to educational inequity. Discussions with educational professionals in interviews and focus groups provided further insight regarding the impact of assessment requirements.

Educational professionals involved in the partnerships suggested three different types of assessment requirements that concerned them. The first was the annual assessment requirements conducted by each of the local authorities. Each local authority had their own requirements for annual standardised testing. The second was the announcement in 2016 that new national standardized testing would be introduced into Scottish Primary Schools. This was announced by the Scottish First Minister, Nicola Sturgeon:

We will collect nationally, and at local authority level, data on the achievement of Curriculum for Excellence levels for literacy and numeracy at the end of P1, P4, P7 and S3. This will be based on teacher judgement – informed by standardised assessment – and will tell us how children and young people are progressing with their learning (Scottish Government 2016).

In addition to the anticipation of new national testing and the current local authority testing, Education Scotland requested that each SIPP partnerships submit some form of data as evidence of impact. Education Scotland provided flexibility in the type of data provided to allow teachers to develop appropriate but robust evaluation approaches. Each of these three external requirements for the collection of assessment data was mentioned in interviews and focus groups.

Beginning with the SIPP programme assessment requirements, both the Cluain and Abhainn partnerships collected qualitative data from pupils, as well as quantitative data in the form of pre- and post-assessment results. When asked to report on the impact of the new pedagogical and professional development initiatives many teachers emphasised the significance of the qualitative evidence over the quantitative evidence:

I don't always think that tests give you an actually true reflection. We also proved that our capacity of our teachers has increased because their questionnaires before and their questionnaires afterwards were much more positive, much more confident. For me that's more important than one set of children gaining results. This for me will have a longer term. (Una, Abhainn partnership)

This headteacher suggested that the impact of the partnerships on teacher confidence and outlook was evident prior to seeing evidence of impact on pupils. Broad perspectives of achievement rather than narrow perspectives of attainment were mentioned by other educational professionals who emphasised the challenge of measuring impact on pupils within a short time period.

Whereas your impact in raising attainment there might be no impact, I wouldn't throw it out of the water cause you might look at your qualitative data and realise you've raised confidence in teachers and consequently the raising attainment impact might come in three years time. But you've got to. There was no impact with this the first 3 or 4,5,6,7 months, there was no impact, there was just actually a bit of confusion. You've got to measure all of the impact. You can't raise attainment in 10 months, but you can raise the confidence of teachers. (Beitris, Cluain partnership)

The time constraints are so much and the idea of getting quick results rather than accepting that for something to change it's going to take 10, 15, 20 years and it's not a short term, quick fix. And that's one of the barriers I see. (Alasdair, Cluain partnership)

These educational professionals spoke negatively about the lack of data to share with others; however, they were very positive about the changes that they could see as a result of their partnership working. They were not satisfied to rely on measures of attainment, but insisted on including broader measures of achievement. Despite the enthusiasm from teachers who had witnessed progress in their own classrooms they appeared to be experiencing frustration regarding their desire to provide evidence to convince others of this. Teachers voiced concerns regarding professional judgment in assessment (such as qualitative assessment) and the debate about the value of, or prioritisation of, standardised testing.

Teachers mentioned the challenge of finding assessments suitable for the new approaches being used. Both CGI and Reciprocal Reading permitted pupils a degree of freedom and choice in terms of their strategies and methods, level of difficulty chosen, and in the case of reading — the variety of literature they chose to read. Assessing achievement while accommodating such variation requires a broad interpretation of success. Acknowledging the uniqueness of each learner's experience was a concern in reference to the assessment requirements.

We look at raw data rather than individual experiences and to me that runs counter to the curriculum that we're meant to be creating. Because it's meant to be about the individual learner.... So, I find that's one of the big barriers. The pressure that you feel under for the testing and I think that will become more of a national issue as well with the idea that that will close the attainment gap. (Alasdair, Cluain partnership)

This teacher mentioned the tension between 'closing the attainment gap' through testing, as opposed to increasing equity by recognising the needs of individual learners. Instead of having the opportunity to foster pupil capabilities this teacher describes a tension between providing for pupils and satisfying testing requirements.

The frustration around the announcement of the introduction of national standardised testing was also mentioned by a headteacher.

I learned about national testing a year and a half ago and I thought, "You're having a laugh! You just got us doing all this... and now you're just going to test them!" (Una, Abhainn partnership)

Most of the educational professionals involved in the partnerships, such as the headteacher above, worked at schools in disadvantaged areas. This headteacher was clear about her expectations that national test results could not reflect the hard work of her partnership or provide a source of support towards efforts to provide more equitable education.

Standardised testing at the national level or the local authority level, and other testing for the purpose of revealing partnership impact were mentioned by educational professionals as challenges to their efforts both to increase educational equity and to demonstrate progress in the area of educational equity.

Chapter summary

Data pertaining to research question 1 (a) revealed that educational professionals sought to establish collective aims, but that they differed in their motivation to participate. In the discussion chapter this finding is interpreted in light of existing literature. Differences in motivation may have been caused by differences in prior experiences of educational reform (Day 2000; Morris, Chen and Ling 2000) and may have influenced the sustainability of the partnership (Fielding 1999; Noam and Tillinger 2004).

Findings pertinent to research question 1 (b) include evidence that the provision of changed power structures, support for different methods, and the development of relationships increased the freedoms and choices available to educational professionals and

pupils. This conversion of resources into valued capabilities is discussed in relation to existing literature in Chapter 7.

From the data, issues of staff shortages and staff turnover inhibited collaboration between educational professionals. Pressures due to required or proposed assessment and accountability practices also present barriers. These findings pertaining to research question 1 (c) are discussed in Chapter 7 by drawing on existing literature regarding assessment and accountability and staff changes (e.g. Finnigan, Daly and Liou 2016; Boaler 2003; Au 2013; Kousholt 2016).

Chapter seven: Findings for research questions 2 and 3

Research question 2 (a)

How did the social network structures of the partnerships involved in the School Improvement Partnership Programme influence educational professionals' generation or sharing of new knowledge and understanding?

This chapter explores the influence of network structures on educational professionals' generation or sharing of new knowledge and understanding through the lens of social network theory. By examining the position, quality and quantity of ties between actors the network structure and its potential impact can be revealed. Social network analysis was used to examine the network structures in relation to educational change (Daly 2010).

Using social network analysis to explore the ties of educational professionals involved in the SIPP partnerships illuminated the following: individuals with 16 or more years teaching experience formed a distinct subgroup within the wider network; the collaborative inquiry approach appeared to influence the generation and sharing of innovative knowledge; both partnerships had low density and centralised configurations; and very few individuals gained bridging capital. These observations are the results of measurements of in-degree and betweenness centralities of individuals; density and subgroup E-I indices of the networks; and interview and focus group transcripts. Some of the measurements, such as density and E-I index were calculated for the entire network or a subgroup of the network; whereas, in-degree centrality and betweenness centrality were calculated for each individual. Although the focus of a whole network study, such as this, is on the entire network, it can also be helpful to examine measurements for individuals within the network to illuminate their role in network activity.

One measurement that can be used to compare the positions of individuals is in-degree centrality. This was used to measure how many times an individual was sought out to discuss a particular issue compared to the total number of times they could have potentially been contacted. Another measure used to compare the positions of individuals was the measure of betweenness centrality. This was used as a measure of the potential held by an individual to connect two disconnected others. The other two SNA measures were used to compare the whole network or groups within the network. For example, density was used to compare the density of ties within a whole network. The other measure used to compare groups within the network was the Group External-Internal

index (E-I index) which was used to compare the number of external ties reaching outside of the group to the number of internal ties within the group.

Impact of collaborative inquiry

The design of the partnership initiative required teachers to try innovative approaches in their classrooms using collaborative inquiry. The inquiry approach involved teachers developing research questions, collecting data in classrooms and analysing data. Teachers were at the forefront of the collaborative inquiry. Teachers were also dependent on the support from their headteachers and local authority officers to provide supply teachers and other resources; however, headteachers and local authority staff were also dependent on teachers to carry out the inquiry and produce data. The positive E-I index values support this co-dependency by revealing the high number of external conversations had by local authority staff and headteachers with teachers. Rather than local authority staff and headteachers having conversations with each other, the majority of their conversations were with teachers.

	1st time point
head teachers	0.940
LA officers	1.000

Table 20: Cluain partnership E-I index

As the system developed to accommodate a collaborative inquiry approach a number of changes were observed. A headteacher explains the change she observed in her staff members after they participated in collaborative inquiry,

And I think it's the hook of research. That good solid research can make a difference. So they're interested now. My staff, they're more solution orientated rather than just identifying the problems. It's very easy, they'll come along for a meeting to talk about their class and about their attainment "Ah well, they're [the pupils] just not achieving." Whereas now it's, "They're not achieving and this is why I think." And more importantly, "This is what I'm going to do about it." And not sit back waiting for me to give them the answers. "Ah well I think you should try." It's about that confidence I see in my staff as well. (Magaidh, Abhainn partnership)

This reveals the headteacher's experience of her changing role once teachers began participating in collaborative inquiry and then taking more initiative as a result. A local authority officer also mentioned collaborative inquiry and how it resulted in teachers assisting with the expansion of the partnership and the leading of moderation activities:

We're now able to use people that have gone through the SIPP project to further support the work that we're doing not just in rolling out SIPP partnerships within the authority but also deeper down in the moderation activities. And supporting teachers through that process and the professional dialogue and asking more targeted questions to the learning of the children. (Calum, Abhainn partnership)

After being involved in the process of collaborative inquiry educational professionals mentioned the knowledge they had gained. Teachers mentioned the positive experience of collecting a variety of sources of data from their pupils

As well as doing assessments we also interviewed the children and asked them how they felt about the intervention and if things had changed for them. There were lots of opportunities to really gain so much information, so that was advantageous for us. (Claire, Abhainn partnership)

Local authority officers described the benefit of having access to data acquired through the process of collaborative inquiry.

One thing that really helped was the fact that I was able to say, "You know this works and we know it works because we've got data to show it works." Nobody could argue against it because we had the data to back it up. (Calum, Abhainn partnership)

Through their experience of collaborative inquiry teachers were equipped with data, knowledge and experience allowing them to take on new roles. Teachers were developing themselves professionally by making connections, developing relationships and developing their skills and understanding. Many of the teachers who were involved initially were promoted to different positions within the first two years of the programme. For example, participants Alasdair, Deirdre, Morvyth and Agnes from the Cluain partnership and Beitris, Isla and Morag from the Abhainn partnership were promoted or changed jobs after becoming involved in the SIPP programme. The expertise of most of these teachers remained within the local authority since all but one took up posts in their original local authority. These individuals were, however, removed either temporarily or permanently from the partnership.

Experience subgroups

In both Cluain and Abhainn partnerships the subnetworks of educational professionals with 16 or more years of teaching experience stand out as having a propensity toward

internal discussions with one another when compared to the other experience groups. In addition, these educational professionals provided questionnaire answers suggesting they held different opinions from the other groups regarding the purpose of their partnership work. A further examination of educational professionals with 16+ years of teaching experience reveals that only one of the highest positions of influence as measured by in-degree for discussions regarding innovative knowledge or existing knowledge was held by an educational professional with 16+ years of teaching experience. The highest positions of in-degree were usually held instead by educational professionals with 0 to 15 years of teaching experience as is evident in the sociogram below.

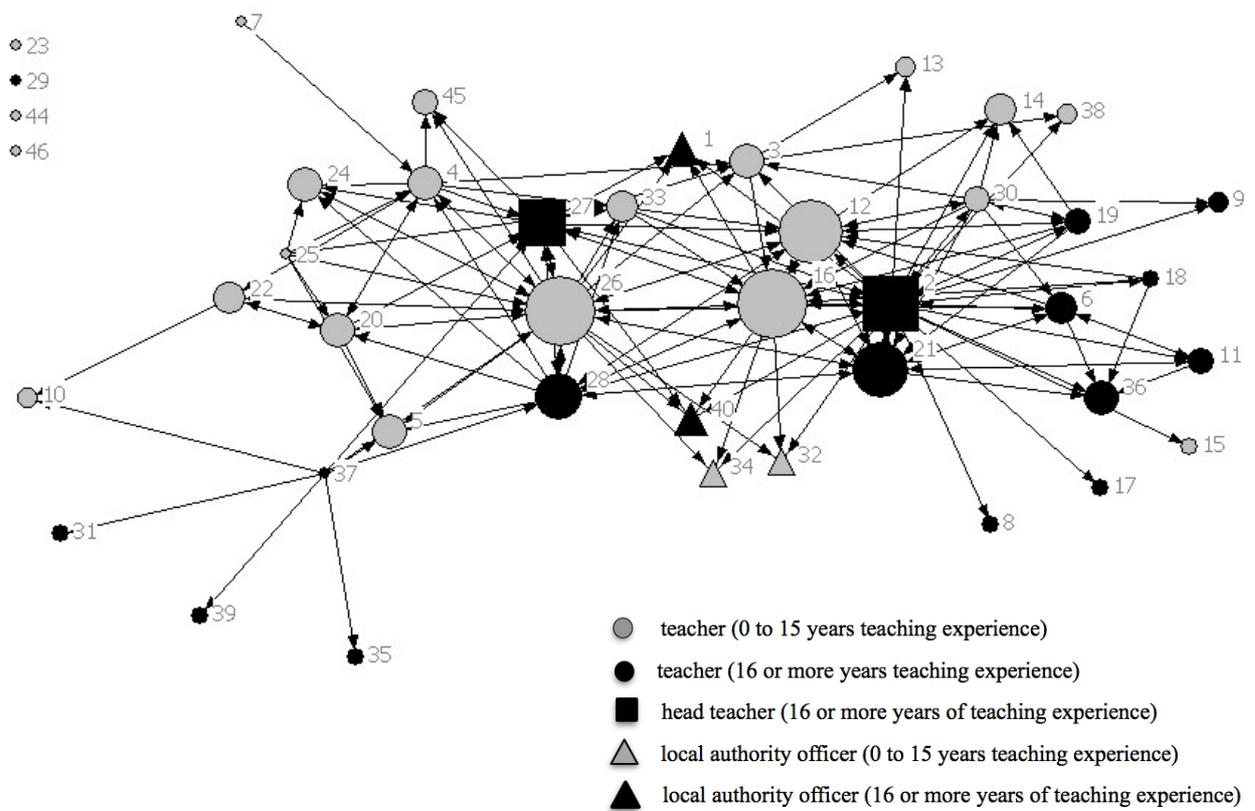


Figure 10: Cluain partnership in-degree centrality for discussions regarding innovation (first timepoint)

The nodes in the sociogram are sized by in-degree centrality meaning that the larger nodes have more ties to others and consequently are in favoured positions. More ties to other educational professionals suggest an advantage since they are in a position to access more resources, ideas and people in the network. These individuals have more choice rather than relying on a small number of people for the exchange of information.

When data was collected for the second timepoint for the Cluain partnership the positions of highest in-degree centrality were still held by teachers with fewer than 15 years teaching experience (teachers number 5 and 26). The sociogram for the second timepoint shows a single partnership split by school affiliation.



Figure 11: Cluain partnership in-degree centrality for discussions regarding innovation (second time point)

The two schools now appear as two separate networks (Figure 11) rather than one unified network as in the first timepoint (Figure 10).

In the Abhainn partnership the highest in-degree position was shared by a local authority officer with 0-15 years of teaching experience (triangle number 2) and a teacher with 16+ years teaching experience (square number 5).

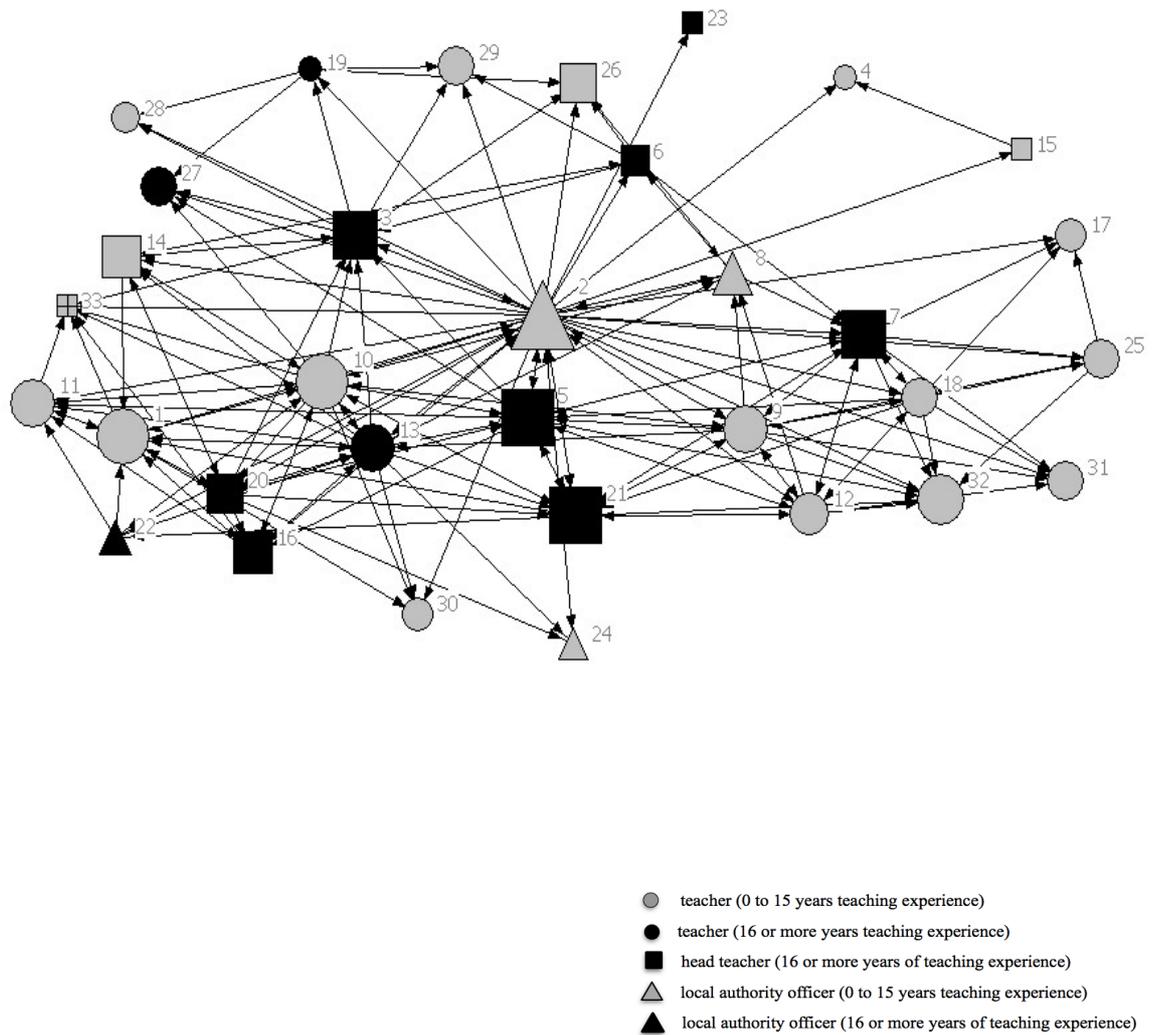


Figure 12: Sociogram of Abhainn partnership in-degree centrality for discussions regarding innovation (first timepoint)

There appears to be a tendency for educational professionals with 16 or more years of teaching experience to have more internal ties and less in-degree centrality when compared to those with less experience.

Comparing the Cluain partnership to the Abhainn partnership: Inter-authority versus intra-authority collaboration

The key difference between the Cluain partnership and the Abhainn partnership was the cooperation in the Abhainn partnership between two different local authorities. As a result, the Abhainn partnership appeared to have greater challenges regarding communication, travelling for visits, and the level of support provided for teachers and

headteachers. This was apparent from transcript and SNA data. Transcripts are discussed first before examining the SNA data.

One of the challenges as a result of working across local authority boundaries was communication since the two local authorities were not on the same email system. This made it more difficult to access email addresses or share documents freely. Part way through the partnership, however, participants were delighted to have found several means of solving the communication issues.

OurCloud.Buzz! It's like Glow. It means they can email the same email thing, and they can access each other's, you know sharing documents and sharing resources it can be done very easily. That has been done! (Beitris, Abhainn partnership)

We text each other as well. Not another email! Text. We've actually managed now to get - we've been given permission to get onto [the other local authority's] Cloud. (Magaidh, Abhainn partnership)

There is a Facebook page. On this Facebook page it's all teachers. It's called Cognitively Guided Instruction in Scotland. So we're now on that. It's just basically like a forum. People put up examples of things they have done and talk about the methods. (Isla, Abhainn partnership)

In addition to facing communication challenges this partnership sought to overcome issues related to differences in support received by participants in the two local authorities.

We did get a feeling through talking to some of our schools that they felt more supported from the centre than their [other local authority] counterparts. (Calum, Abhainn partnership)

This difference in support between the two local authorities had the potential to create a large rift in the partnership.

The challenge I faced was my liaison with my colleague and the equity in terms of workload and that was a challenge, but through our commitment to this and wanting to do our very best for our schools and for our young people we put that aside. (Dorcas, Abhainn partnership)

The local authority officer felt that commitment to the schools and young people compensated for the lack of support in one of the local authorities. Teachers from the two local authorities reported differing experiences. One contrasts the support she experienced compared to teachers from the other local authority.

I was always very supported by my managers within the school to get time to communicate and time to work on the project and I was given the time it deserved. Whereas, maybe I know for a fact that the people in [the other local authority] struggled to get out of the school, couldn't get cover, maybe if they were coming to a

meeting there were two girls.... Maybe one of them could come, but it wasn't always two of them. Their managers in the school weren't really involved. (Isla, Abhainn partnership)

Teachers from the local authority mentioned above confirmed this lack of support.

I wasn't given any particular support within the project. (Una, Abhainn partnership)

In terms of our local authority I didn't personally feel it [support]. (Caitlin, Abhainn partnership)

The support which was lacking was explained one of the educational professionals:

Where this fell down was the ability of my colleague in the other authority to commit and take a clear direction with the heads. We had the heads. It was delegated to them which was fine, but they've got a lot of competing priorities as we all have.... So less of their establishments had the opportunity.... There needs to be someone that's not part of the collaborative group who's facilitating it, particularly at the outset. (Dorcas, Abhainn partnership)

The responsibility of this role ended up being taken on by the same individual in both local authorities, however, the local authority providing less support had a significant number of schools leave the partnership very early on. The resulting partnership was one with significantly more involvement from one local authority than the other. In addition, teachers in the Abhainn partnership did not appear to experience the same level of autonomy as teachers in the Cluain partnership. For example, one of the teachers in the Abhainn partnership described a clear distinction between the role of teachers and heads.

The headteachers have already met and then it comes down to us workers. (Gillian, Abhainn partnership)

Initially I think the headteachers were kind of steering the group, but kind of passed it over to us to take the lead. (Caitlin, Abhainn partnership)

The second teacher makes a distinction between the initial role of the headteachers and the later role. This suggests that in her experience, the teachers were eventually given greater autonomy. In the Cluain partnership, however, this passing of power appeared to happen much sooner.

So we knew by the end of the first day that we had a focus but after that the headteachers left us to kind of see where we were going with the next steps It was kind of just like a big team in terms of who we were, but we were the leaders. (Mhairi, Cluain partnership)

For the teachers to have been enabled to experience this level of autonomy there appeared to be constant support behind the scenes.

They [Local Authority officers] were at meetings, yeah. They helped with the linking with the Glasgow University and then making the links with the schools and provided CPD within the project as well.... The headteacher's support was constant throughout the project. The local authority was more at the beginning, just when it was starting.... ed psychs, officers, Glasgow uni, Ed Scot... (Mhairi, Cluain partnership)

Right from the beginning we had support from the Local Authority looking at the data and helping us with how to analyse the data and what conclusions we could draw from that and how we could use that to help to track children as well. (Morvyth, Cluain partnership)

This teacher emphasised the local authority support at the beginning of the initiative. There appeared to be a difference in the duration of the local authority support in the Cluain partnership and the Abhainn partnership. In the Cluain partnership local authority support is mentioned as something that was there at the beginning, whereas, with the Abhainn partnership the quotations reveal not all of the participants felt this support. The SNA data suggests a difference in the type of support provided. In the Cluain partnership teachers felt supported to take on central positions, as measured by in-degree centrality, with local authority officers (represented by triangles) supporting from the periphery. The four local authority officers (triangles) in the Cluain partnership are barely visible. In comparison, in the Abhainn partnership teachers' quotations suggest less support from the local authority, but at least one local authority officer (triangle) is positioned very centrally. Within this network structure, the partnership members appeared to feel less supported.

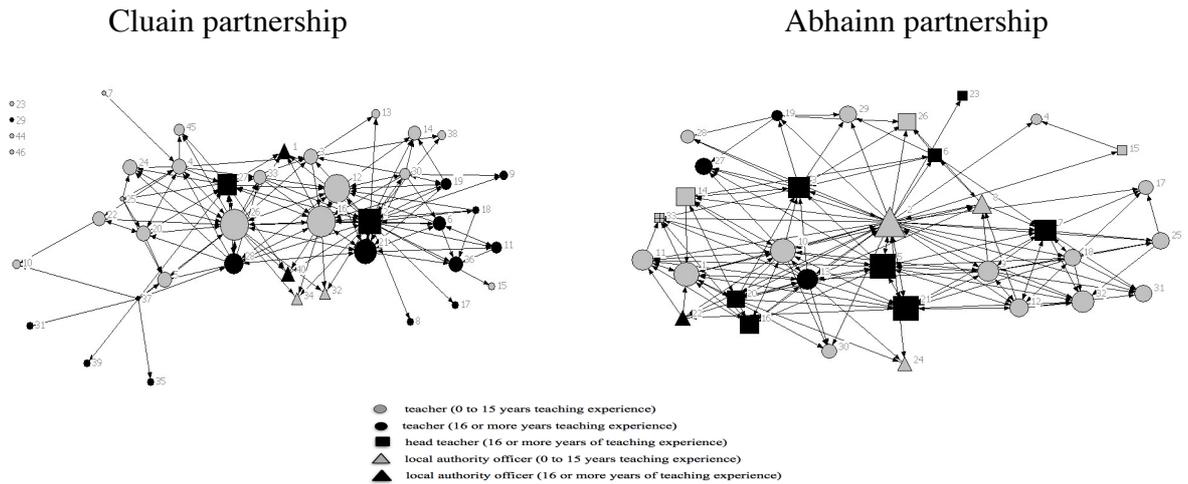


Figure 13: Sociogram comparison of in-degree for both partnerships

A comparison of these two local authorities using the SNA data reveals that different network structures developed. The partnership operating in a single local authority had more teachers in central positions. The partnership operating across two local authorities had a local authority officer in a central position.

Intra-authority benefits

Despite the many challenges faced by the Abhainn partnership due to maintaining an intra-authority partnership, many of the participants mentioned reasons why the partnership was successful. These reasons included the similar deprivation levels of the two local authorities and the common purpose.

It was good to have two authorities from similar areas of deprivation where resources weren't a plenty.... You can't replicate what some authorities are doing when they've got more money than us. (Moire, Abhainn partnership)

Another benefit of involving the two different local authorities was the breadth of knowledge and expertise available:

You have to get like-minded people who maybe don't have the same skill-set but certainly they have a pool of skills that you can use. You have heads in [the other local authority] who've got really good knowledge and experience and skills that have helped enhance work that we've done here and vice versa. (Dorcas, Abhainn partnership)

Educational professionals in the Abhainn partnership also expressed the significance of feeling that their partnership was free from competition. Teachers attributed this to working towards the same goal:

Knowing it wasn't a competition between teachers. You were all in it for the same reason. You had the same goal. That was really nice. (Isla, Abhainn partnership)

Everybody wants to be the best of the best and having two authorities that were willing to work together, share practice for the benefit of the children. (Moire, Abhainn partnership)

Group Closure

Members of both partnerships spent time developing trust with the individuals in their partnership. Many individuals mentioned the significance of time spent on these close relationships.

How do you work with other people, being able to support them, challenge them? You need to be in a position where you've got a good grounding in the relationship first of all. I think it's very much about the early stages and understanding you have to give people time to build these relationships to start off with. (Calum, Abhainn partnership)

You can't really build something sustainable unless you have that trust, you have that experience. And that's why it was really important to meet as often as we could even given the fact that that is not always possible for everyone to be at every meeting, but the more you try the more you'll accomplish so the conversations certainly changed. I think there was a lot of getting to know you and building up trust and building up confidence so that the conversations became deeper as we went along because we were establishing this effective communication and positive relationship between us all whether it be face to face, on the phone, email. (Claire, Abhainn partnership)

These relationships were developed across schools, positions, local authorities and partnerships. Some of these individuals formed brokering relationships across boundaries.

Brokering

When educational professionals introduced innovative or non-redundant information from or to an individual or network outside their own they took on a brokering position between two distinct groups. This action introduced resources or knowledge into the network and disrupted levels of trust, hierarchy or group cohesion. To measure the brokering opportunities of a particular node the Freeman betweenness was calculated. In the sociogram below the nodes are sized by betweenness meaning that the larger nodes are in positions to form bridges between others who themselves are disconnected. The larger the node the greater the brokering role.

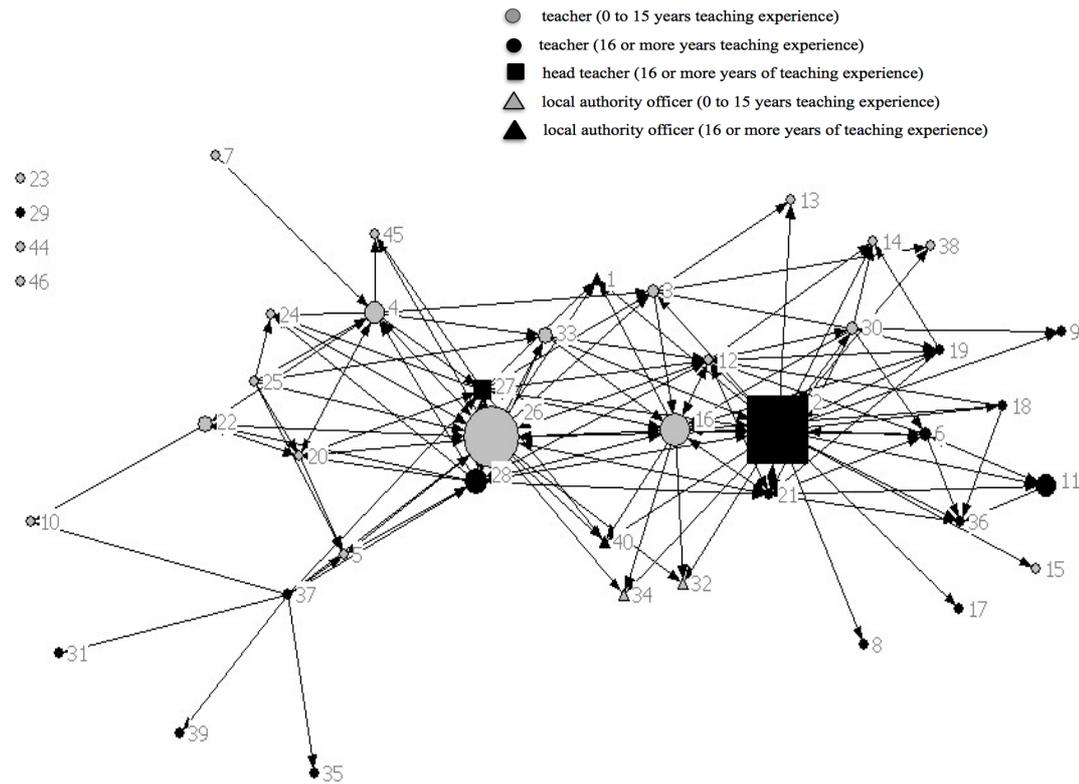


Figure 14: Cluain partnership betweenness for discussions about innovation (first time point)

In the school on the left a teacher dominates the key brokering position; whereas, on the right a headteacher dominates the brokering position. Very few other educational professionals have sizeable nodes to indicate brokering action. There was also a large percentage of nodes with a betweenness measure of 0. This suggests a network in which there was not a lot of brokering or passing of information between the two schools involved in this partnership; however, interview, focus groups and questionnaire responses suggest a number of educational professionals brokered ties outside of their schools and local authorities. For example educational professionals mentioned ties with other local authorities, university staff, and Education Scotland. These ties were not visible in the sociograms since the boundary of the networks in this study only included teachers, headteachers and local authority officers from within the known boundaries of the partnership. The connections made between educational professionals and those not mentioned on the SNA questionnaire are not visible on the sociograms. Connections were mentioned, however, in interviews, focus groups and in other survey questions. These sources of data revealed educational professionals were not only discussing educational inequity and pedagogical ideas with teachers, headteachers and local authority officers, but

also with several others. Headteachers and teachers such as Deirdre, Claire, Mhairi, Morvyth, Alasdair and Magaidh mentioned working with university research teams, educational psychologists, community learning development workers, support for learning assistants and educational professionals from other local authorities.

The dramatic contrast between the first and second time point for the Cluain partnership suggests the network was not stable at the first time point. At the first time point this partnership appeared as one unified network (Figure 10), but for the second time point the network has split into the two primary schools (Figure 14).

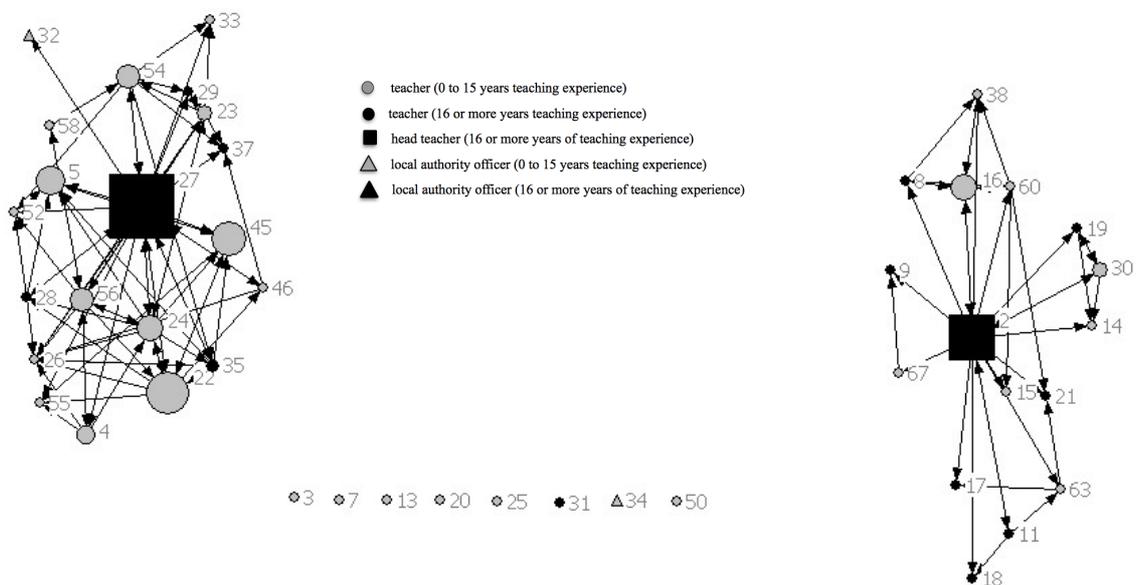


Figure 15: Cluain partnership betweenness for discussions regarding innovation (second time point)

This suggests the ties between the two schools at the first time point may have been tenuous ties with a limited number of individuals dominating the brokering. Also, from the first time-point to the second, the number of isolates has doubled suggesting more actors are disconnected from the network entirely. The majority of isolates are teachers with fewer than 16 years of experience. Local authority officer involvement also changed dramatically from the first time point to the second. Two of the local authority officers (numbers 1 and 40) retired within this time period. Another local authority officer was no longer involved in discussions pertaining to innovative ideas (number 34).

The Abhainn partnership is very different from the Cluain partnership since its membership includes a much larger number of schools, yet comprises only a select group of teachers or heads from each school. It also spans two local authorities rather than just one. These teachers, headteachers and local authority officers have a very centralised network with a local authority officer in the most central position according to both in-degree and betweenness. A centralised network that is dependent on one individual suggests a network which may not be sustainable over time. It is interesting to note that this particular local authority officer had fewer than 16 years teaching experience, similar to the majority of the educational professionals in powerful positions in the Cluain partnership.

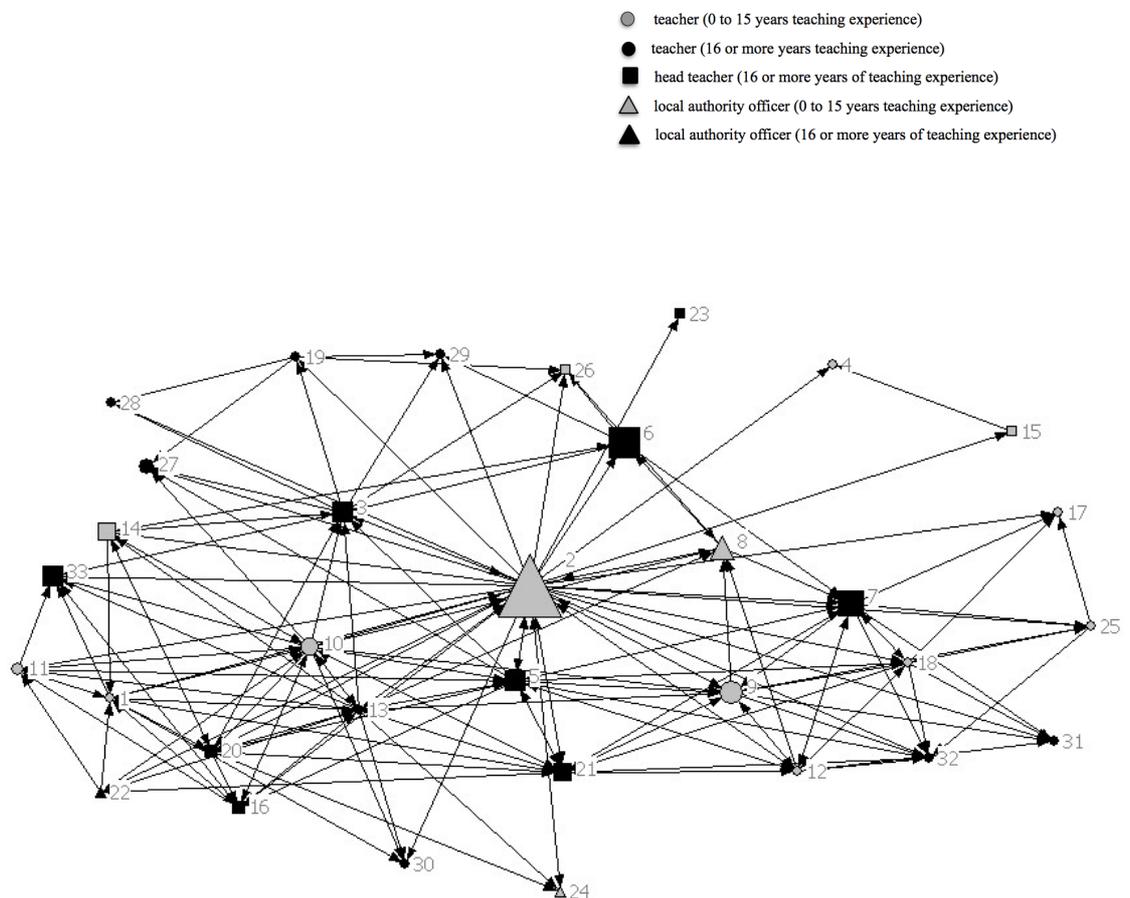


Figure 16: Abhainn partnership betweenness for discussions regarding innovation

In the Cluain partnership the individuals with the highest betweenness measures were teacher 26 and headteacher 2. In the Abhainn partnership the individual with the highest betweenness measures was local authority officer 2. Others who were actively making connections within their own subgroups were measured using in-degree centrality and were found to be participants 2, 12, 16, 26 (Cluain partnership) and 2, 5, 21 (Abhainn partnership).

The teachers and headteachers in the Abhainn partnership who acted as bridges (see larger nodes number 6 and 7) stated they had visited local authorities outside of the two local authorities that were involved in this partnership. These ties are not represented on the sociogram. They described the role of a broker using language such as a ‘nosy stealer’.

I'm a very nosy person. And when I see good practice I just go chapping on doors so I went through to a school in Musselburgh, down to Inverclyde and Glasgow just to see. (Magaidh, Abhainn partnership)

I'm nosy so I'm like, "Can you take us on a tour? Show us what you're doing?" (Una, Abhainn partnership)

We've stolen the CGI. (Una, Abhainn partnership)

One of the teachers described her role of stealing ideas and passing them on to other teachers. The heads and teacher who described themselves as nosy or as thieves were people who played a significant role by bringing ideas into their local authority and also by sharing them with others outside of their local authority. This bridging role allowed a transfer of ideas - a necessary component for the success of their partnership. Of interest is the choice of vocabulary used by some of the educational professionals to describe those who took on the role of a bridge or broker. Further research might investigate whether or not the image of a ‘nosy thief’ indicates negative associations with the role of a bridge or broker and whether or not this perception has been an impediment to collaboration in Scotland’s schools.

The social network analysis data supported the notion that the headteachers who described themselves as nosy also acted as bridges within their own networks since of all the educational professionals the only participant with a higher betweenness measure than these two headteachers (numbers 6 and 7) was a local authority officer (number 2). The partnership would have benefited from more people taking on this role.

In addition to having many low betweenness measures (and several people with a betweenness measure of 0), both of the partnerships had low density suggesting a dependency on very few individuals. This dependency may have led to increased instability over time.

In survey question 14, respondents were asked whether or not their experience of working within a partnership provided the following benefits: the opportunity to learn new approaches to learning and teaching; the opportunity to recommend an approach to another teacher or professional.

	Opportunity to learn to approaches to learning and teaching	Opportunity to recommend an approach
Cluain partnership	80%	63%
Ahbainn partnership	86%	88%

Table 21: Survey question 14

The majority of responses to these questions were positive, yet the social network analysis reveals a more nuanced perspective. When respondents were asked to list the people with whom they discussed new and innovative teaching and learning ideas, the responses resulted in networks of very low density. For example, in the Abhainn partnership for approximately every 12 possible discussion ties between educational professionals in the network only one existed (8.5%). The highest density for innovative collaboration among all of the networks was only 0.173 suggesting only 17.3% of all possible ties in the network occurred. These low densities suggest relatively few interactions took place regarding discussions about innovative ideas. Also of note is that in all of the partnerships the density measures were consistently lower for innovative knowledge networks than for existing knowledge networks.

	Cluain partnership: innovative knowledge	Cluain partnership: existing knowledge	Abhainn partnership: innovative knowledge	Abhainn partnership: existing knowledge	Cluain partnership: second time point, innovative knowledge	Cluain partnership: second time point, existing knowledge
Density	0.173	0.196	0.085	0.137	0.057	0.108

Table 22: Network densities

Note: Data was not available for the second timepoint of the Abhainn partnership due to the very low response rate.

Networks with low densities tend to be dependent on only a few key people. The E-I indices also reveal that over time the teachers and headteachers reported fewer external discussions with educational professionals outside of their own school regarding innovative ideas when compared to internal discussions with participants inside of their school.

	1st time point (2015)	2nd time point (2016)
pink school	-0.290	-0.969
blue school	-0.253	-1.000
LA officers (black triangles)	1.000	1.000

Table 24:

Cluain partnership E-I index for innovative knowledge discussion networks

The decrease in collaboration was influenced by the waning of external funding and support (Chapman et al. 2016). There were also key leaders and brokers who left the partnership due to a change in their job (2, 12, 20, 27 from Cluain and 10, 11, 21 from Abhainn) or retirement (numbers 1, 40 from the Cluain partnership). The majority of these changes were noted between the data collection at the first time point and the second time point. As a result of these changes and in combination with low density, the partnerships faced instability over time.

Summary

The structures of the innovative knowledge networks were analysed by measuring E-I indices, betweenness, degree centrality and density. These measurements suggested the innovative networks had some educational professionals in better positions for brokering knowledge and resources than others. For example, the E-I indices indicated headteachers and LA officers chose to correspond more with teachers than with one another suggesting teachers had a central role in the collaborative inquiry process. Some of these teachers, particularly those with fewer than 16 years of experience, had high betweenness and in-degree centrality suggesting they held positions of potential influence. Many of these teachers were given new leadership opportunities and some were promoted to new positions during the course of the partnership programme. The interview and focus group transcripts revealed a calculated and intentional sharing of power between local authority officers, headteachers and teachers. When and how power was passed along from the local authority to headteachers to teachers appeared to differ between the two partnerships.

Low density and major changes in the second time point revealed instability in the partnerships over time, yet the reach and sustainability of both partnerships appeared to extend beyond what the social network analysis was able to report. The social network analysis was only able to measure within the boundary of the network of the study. Interviews, focus groups and questionnaires revealed networks extending beyond these boundaries suggesting some educational professionals were in brokering positions unseen on the sociograms.

Also unseen by the social network analysis were the ways in which entire schools and local authorities benefited from the brokering activities of individuals. In the case of the Abhainn partnership, after ties had formed between several schools and individuals across two local authorities, an innovative approach had been tried in a disadvantaged school, and

this new approach had been shared with less disadvantaged schools. As the headteachers from one of the most disadvantaged schools stated,

We felt we had something to give to another school rather than always being takers.
(Beitris, Abhainn partnership)

Not only had the collaborative inquiry provided the opportunity for teachers and pupils to benefit, a pattern had been disrupted. The pattern of the most disadvantaged school always feeling like a 'taker' had been disrupted. This type of positive change is difficult to measure with calculations such as in-degree, betweenness and density. What these social network analysis measures are able to provide are insights into areas of concern to pursue further. How can this sort of success be sustained? What could have been done to prevent the instability that resulted in a disconnected partnership in the second timepoint for the Cluain partnership? How and why did the less experienced teachers have positions of power? These questions will be explored further in the discussion section.

Research question 2(b)

How did the social network structures of the partnerships involved in the School Improvement Partnership Programme influence educational professionals' generation or sharing of existing knowledge?

Research questions 2 (a) and (b) differ only in the type of knowledge being examined. Question 2(a) is about new and innovative knowledge; whereas question 2(b) is about existing knowledge. The questionnaire distinguished between these types of knowledge by providing the following explanation:

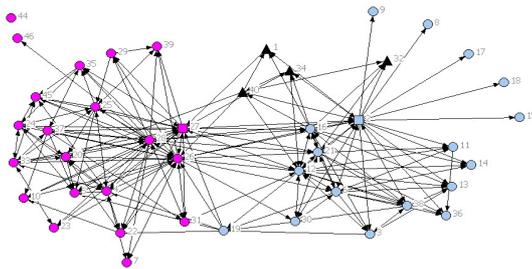
The following questions will distinguish between two types of teacher knowledge: knowledge which is new to you and others in your school compared to knowledge which is not new, but has recently been shared within the group. Those ideas which are brand new will be described as new and innovative. Those ideas which are not new to everyone, but which have recently been shared between two or more people will be described as tried and tested.

From the literature regarding social capital it was expected that different network structures might be observed for these different types of knowledge transfers. Ronald Burt (2001) argues innovation and creativity are fostered by network actors who span structural holes whereas redundant or existing information is more likely to flow within dense networks of high closure and consequently, high trust.

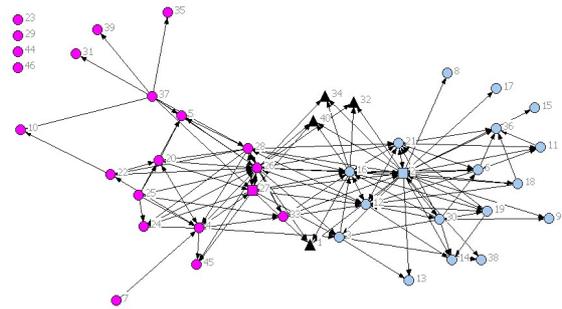
Comparing networks of new knowledge to networks of existing knowledge

Prior to collecting the data it was expected that network closure (demonstrated by a positive value E-I index approaching 1.000) and high density would be characteristic of networks of existing knowledge exchanges. For the networks of innovative knowledge discussions, it was expected that lower densities would be observed, as well as an increased potential for brokerage across structural holes (higher measures of betweenness). The first stage of the data analysis involved the construction of sociograms to compare the networks.

Existing knowledge



Innovative knowledge



pink/blue circles: teachers

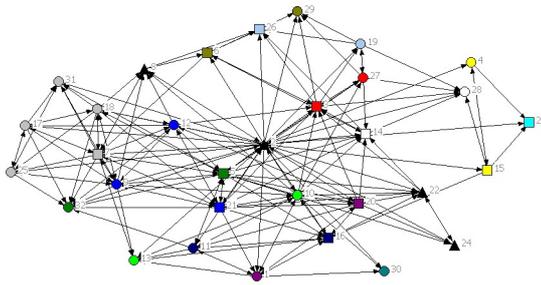
pink/blue squares: headteachers

black triangles: local authority officers

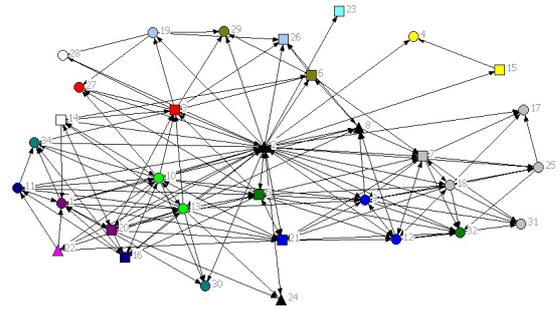
(pink and blue colouring distinguishes staff from two different schools)

Figure 17: Cluain partnership comparison of knowledge networks

Existing knowledge



Innovative knowledge



circles: teachers

squares: headteachers

triangles: local authority officers

(different colours distinguish staff from different schools)

Figure 18: Abhainn partnership comparison of knowledge networks

Further comparisons were made between the innovative and existing knowledge networks by analysing density, mean betweenness in each network and the E-I index between subgroups. It was expected that the innovative knowledge network might have more brokerage activity when compared to the existing knowledge network. Actors in potential positions for brokering were measured using betweenness centrality. It was also expected that the existing knowledge network may be a denser network with a lower E-I index between the two schools within the partnership.

	Network density	Mean betweenness (normalized)	Network Centralization	E-I index between schools	
				pink school	blue school
Innovative knowledge network	0.173	1.007	11.14%	-0.290	-0.253
Existing knowledge network	0.196	1.908	21.01%	-0.631	-0.373

Table 24: Cluain partnership comparison of different knowledge networks

An examination of the schools in Cluain partnership reveals a slightly larger density for the existing knowledge network, which was expected. The mean betweenness for the existing knowledge network is slightly higher which was unexpected. This unexpected result may be due to the fact that there was brokering activity which took place outside of the bounded network and was therefore not included in this measure. The E-I indices are slightly lower for the existing knowledge network, which was expected. Overall, the differences between the two types of knowledge networks are only very slight and smaller than expected.

The existing knowledge network in the Abhainn partnership also has a higher density when compared to the innovative network, as was expected. The mean betweenness for the existing knowledge network is slightly higher which was unexpected, but similar to the result in the Cluain partnership. Like Cluain, this unexpected result may also be due to brokering activity that took place outside of the bounded network. The E-I indices are slightly lower for the existing knowledge network in the larger local authorities, but not in the smaller local authority. This unexpected result may be due to the small size of the local authority which limited the external tie opportunities available for actors in this

network. In both partnerships, the differences between the innovative knowledge networks and the existing knowledge networks were smaller than expected.

	Network density	Mean betweenness (normalized)	Network Centralization	E-I index between schools	
				orange authority	green authority
Innovative knowledge network	0.085	1.753	24.94%	-0.369	0.326
Existing knowledge network	0.137	2.642	24.69%	-0.307	0.243

Table 25: Abhainn partnership comparison of different knowledge networks

Summary

The structures of the networks regarding existing knowledge were compared to the innovative knowledge networks by measuring E-I indices, betweenness and density. The findings for these two types of knowledge networks were more alike than expected. From the literature, it was expected that innovative knowledge networks would have less density, lower E-I indices and higher betweenness when compared to existing knowledge networks. Many of the innovative knowledge networks did have less density, lower E-I indices and higher betweenness, but only by a slight margin. A potential cause of this result is the interconnected nature of the network conditions required for the exchange of innovative knowledge when compared to the exchange of existing knowledge. If both types of exchanges are taking place simultaneously the network requires brokers to bring in innovative ideas, but it also requires high density for the exchange of existing knowledge and also high density such that the brokers are trusted enough to have their innovative ideas accepted. Burt and Merluzzi (2016) describe a dynamic movement or an individual's oscillation between these two sets of conditions:

... a period of deep engagement in a group, followed a period of brokering across groups, followed by deep engagement, followed by brokering, and so on (p. 1).

At any given time there may be some actors involved in a period of deep engagement, while others are involved in brokering. This leads to questions regarding the optimum balance between these conditions to foster stability within a network that is able to mobilise both innovative knowledge and existing knowledge.

Research question 3

What factors contributed to the impact of the School Improvement Partnership Programme on pupil achievement?

Qualitative evidence of impact on pupil achievement

Pupil achievement is defined in the literature section of this study to include both quantitative and qualitative evidence. The factors contributing to the impact on qualitative evidence of pupil achievement have been interpreted using the lens of the capability approach and explained in relation to research question one. Opportunities for resources to be converted into valued capabilities which lead to achievements were fostered by a number of social conversion factors. The social conversion factors discussed in relation to research question one include changes to power structures among educational professionals and power structures within classrooms. Additionally, an increase in the degree of freedom provided for educational professionals and for targeted and non-targeted pupils contributed to the conversion of resources into achievements.

Quantitative evidence of impact on pupil achievement

The following section will add to the discussion regarding achievement by describing the efforts made throughout the course of this study to access and analyse quantitative evidence. Quantitative evidence of pupil achievement was collected at different levels during the funded period of the School Improvement Partnership Programme. At the level of some of the partnerships bespoke pre- and post- assessments were designed and administered by teachers. At the level of each local authority further tests were administered annually. Of the local authorities involved in this study one administered standardised testing annually to all pupils in primary school. One of the other local authorities administered standardised testing annually in Primary 1, 3, 5 and 7 and in the other local authority tests were administered annually in Primary 3, 5 and 7. Two of the local authorities in this study used GL Education Group pupil assessment tests and the other local authority used bespoke authority-wide tests.

Time was taken to gather these sources of quantitative data from each of the partnerships and each of the local authorities. A statistical approach called Difference in Differences was then chosen as an approach to compare observations for two groups (a control group and a target group) over two time periods. After using SPSS to run the Difference in Differences calculations it was found that the data were insufficient to produce valid results. More specifically, in both case studies it was not possible to divide the pupils into distinct groups for a number of reasons.

In the Cluain partnership pupils in the target group were in the same classroom as those who were not in the target group. All of the pupils were receiving the same exposure to the innovative approaches being introduced in the classroom.

The focus has still been to track those boys who are minority learners but it's had an impact across the whole group because we've used the same strategies across the whole group of pupils. (Morvyth, Cluain partnership)

... quite quickly it became apparent that it would be unfair to allow the girls who have English as their first language not to participate. So it seemed to be fair to make sure that everyone was able to participate to raise attainment. (Alasdair, Cluain partnership)

Achievement data was collected for these pupils at two time points, when they were in Primary 5 and again when they were in Primary 7, but there wasn't any available data for a suitable comparison group. To use a Difference in Differences approach it would have been necessary to have a distinct target group. In addition, it would have been necessary to have more complete data for a larger control group and a larger target group. The available data included 28 target group pupils, 27 of whom completed both the pre- and post-assessment. It included 11 'control group' pupils, only 7 of whom completed the assessment at both time points.

In the Abhainn partnership data was provided for over 100 pupils, but there was no clear target group. The partnership stated Primary 4/5 as the original group of concern, but not all of the teachers involved in the SIPP were teaching the cohort of pupils that began as Primary 4 or 5 at the beginning of the programme and finished as Primary 6 or 7 at the end. For this reason it was not possible to distinguish between those pupils who had been exposed to the innovative teaching approaches and those who hadn't. Another difficulty with the achievement data from the Abhainn partnership was an inconsistency in the pre- and post-assessment. During the course of the programme one of the local authorities

changed the assessment test used by the schools so that the test used in the pre-assessment was from a different source than the test used in the post-assessment. To be suitable for the Difference in Differences approach it would have been necessary to have data collected using comparable pre- and post-assessments from two clearly designated groups of pupils that remained consistent. In this particular programme finding data from a suitable control group was very difficult because the innovative teaching approaches were quickly spreading among teachers in the same school and local authority and even across local authorities. Even if a suitable control group was used, it must be noted that there still would have been limitations such as changes due to the SIPP intervention occurring before or after post-assessment data was collected. Additionally, assessment at the primary school level in Scotland is not standardised so the choice of pre- and post-assessments varied greatly between local authorities and over time.

The perspectives of the educational professionals involved in the partnerships were also taken into consideration. From conversations with teachers it became evident that they were not using the achievement data in isolation. They interpreted the data in combination with observations of pupil background characteristics, pupil classwork, pupil conversations and behaviour.

So yes there was lots of evidence there, but the things to me the things that meant the most to me were things that you can't measure like the things children would say and watching their confidence and a change in their attitude that sort of thing. The fact that they were looking forward to maths...And a particular child... not confident in her ability in maths....She stood up, this primary 5 girl in front of all the primary 7s, "You know I've got this wrong after this part, but this is what I've done. Not sure where to go next." That sort of thing. Just that kind of confidence. That ability to articulate as well. (Isla, Abhainn partnership)

Despite the challenges that prevented the use of statistical analysis to demonstrate pupil achievement, other data sources were utilised in the previous research questions to illuminate evidence of pupil progress.

Chapter Eight: Discussion

The capacity of school-to-school partnerships to expand opportunities for equitable education has been examined in this exploratory study. This chapter will discuss the findings in relation to extant literature, as well as considering the limitations of the findings. This chapter highlights contributions to the literature regarding key factors that impact the stability of school partnerships in disadvantaged areas and the impact of their efforts to ameliorate educational inequity.

Factors impacting the stability of partnerships in disadvantaged areas

A number of forces operating from outside of the partnerships impacted the stability of these school partnerships such as network churn, context clashes, assessment and accountability pressures, the exodus of the reticulists, and in some cases a lack of resources. Few of the forces impacting the stability of the partnerships appeared to reside from within the partnerships although a difference in motivation may have been one such factor. Each of these factors is discussed below.

Network churn

It was expected from the literature that over time collaboration would benefit schools and local authorities by providing access to a wider range of expertise, innovative knowledge and resources through increased ties and strengthened relationships (Daly and Finnigan 2010; Ainscow 2016). However, the ties in this study appeared sparse and changeable over time suggesting that there may have been missed opportunities for the exchange of innovative knowledge and resources. Possible explanations for the instability may have been the high staff turnover, as well as the pressures caused by staff turnover. This supports research by Finnigan, Daly and Loiu (2016) that revealed missed opportunities for the sharing of research-based practices due to network churn. Their research suggests network churn can be worsened by increased levels of stress and movement due to accountability policies that cause more damage to struggling schools than to other schools. Issues of accountability and assessment were voiced by some of the educational professionals from the SIPP who expressed anxiety regarding these issues.

An alternative perspective regarding the stability of the intermediate space in which the partnerships were situated is provided by the research of Noam and Tillinger (2004) who posit dynamic changes in the structure of an organisation may be indicative of a process-oriented transformational partnership. This presents an alternative interpretation of the

findings which revealed dramatic changes such as a splitting of the Cluain partnership into two parts by the second time point. More research is needed over a longer period of time to determine if the splitting of the partnership was temporary and part of a longer term positive transformation or sustained and detrimental in the long run.

Context clashes

In support of the literature, the data revealed that as a result of feeling under pressure to assess narrow measures indicating pupil success, some teachers felt constrained regarding how much emphasis they could place on the development of wider achievements such as capabilities (Saito 2003). Other teachers stated the lack of available supply teachers as a constraint or the instability caused by other educational professionals being promoted. The lack of supply teachers and the promotion of educational professionals appeared to be impacted by the re-direction of government efforts into a similar, but different initiative during the SIPP funding period. The Scottish Attainment Challenge was launched only 15 months after SIPP and the Attainment Advisors associated with this newer initiative were appointed soon after. The resulting increase in staff turnover and demands on time and strain on resources due to the Attainment Challenge appeared to present barriers to the sustainability of some of the SIPP networks.

Exodus of the reticulists

Most of the groups and subgroups of educational professionals who participated in partnerships demonstrated coherence in their purposes and vision for their collaborative work. This was evidenced in the E-I index and questionnaire data. The exception was the subgroup of educational professionals with more than 16 years of teaching experience who demonstrated differences in their aims and values for their partnership. This subgroup also demonstrated higher internal participation within their subgroup. It is possible that this more experienced subgroup held different assumptions regarding the movement of knowledge. Most of these educational professionals were not in positions of high betweenness and centrality, nor were they promoted to other positions by the second time point.

The second time point indicated that a number of educational professionals with less than 16 years of experience were promoted to other positions. As they left, one of the partnerships displayed visible structural holes without brokers to fill the gaps. Increasing the involvement of the subgroup of educational professionals with more than 16 years

experience may have been beneficial for the sustainability of the networks. If a greater number of educational professionals with more than 16 years of experience had been in positions of higher betweenness or centrality, the partnership may have demonstrated greater stability over the time points.

Key individuals who take on positions of brokering and who demonstrate skills in managing non-formal networks in a non-hierarchical decision environment are named in the extant literature as reticulists (Friend 2001; Williams 2002). The specialised skill of brokering in this context appears to have been limited to some of the actors who had left the network by the second time point. Extolling the virtues of partnership working (i.e. the potential for partnership working to provide opportunities to address educational inequities) without providing opportunities to sustain the role of reticulists may have added to the instability of these networks. Before promoting the educational professionals holding these informal roles to more senior employment positions, it may have been beneficial to the future of the network if these individuals had remained in the network or trained others to take on this significant role before their exodus.

Assessment

Schools are increasingly being asked to provide innovative solutions using resource networks and incorporating ingenuity. Despite the potential to access solutions via these means, there is an inherent conflict between the development of social capital and assumptions regarding the overarching purposes of education when these purposes are evaluated using narrow, individualistic or competitive means.

In this study assessment practices were stated by approximately half of the respondents as having an impact on educational inequity in the questionnaires. This was also mentioned in interviews. Pressure to avoid risks that may negatively impact assessment results was stated as an inhibiting factor to collaboration. This is consistent with the literature regarding the Manchester Challenge:

... pressures created by national policies led to strategic dilemmas in so doing, particularly in respect to the need to demonstrate rapid increases in test and examination scores (Ainscow 2012a: p. 292).

The degree of pressure expressed by educational professionals in the SIPP programme was varied. Pedagogical expansion involved a broadening of the curriculum through pedagogical innovation. The pressures of assessment mentioned by some of the teachers suggested the potential narrowing of the curriculum. These findings are consistent with

other literature which points to the magnification of negative effects of assessment pressures on schools in disadvantaged areas (Finnigan, Daly and Liou 2016). This research contends that the pressure regarding assessment results experienced by schools in disadvantaged areas tends to be detrimental to efforts to increase collaboration and equity. Additional research reveals an emphasis on narrow measures of assessment restricts curiosity and creativity (Sahlberg 2010; Au 2008; Shohamy 2001), and increases inequalities (Boaler 2003; Au 2013; Kelly et al. 2017).

Some teachers mentioned that the First Minister's announcement of a policy change regarding assessment (Scottish Government 2017b) caused them to change their behaviours in anticipation of the risk to the success of their pupils when measured against standards.

Further research is needed to: suggest broader measures of assessment to prevent cyclical patterns of inequity; identify practices and beliefs that influence the stability and sustainability of the partnership; and the extent to which aspirations and purposes of the network were motivated by administrative plans and to what extent they were motivated by a common commitment.

Lack of resources

As the funding for SIPP came to an end funding was being allocated to newer initiatives such as the Attainment Challenge. An intentional and longer-term alignment of funding may have prevented the movement of partnership members to other initiatives. This may have allowed the networks to be sustained over a longer period of time. The challenges to the network sustainability call into question the locus of decision making power. Whose agenda initiated the partnerships in the first place and was sustainability a priority? Further research is required to address this issue.

Motivational differences

Different sources of motivation appeared to contribute to the instability of network ties. Some of the educational professionals mentioned ethical and altruistic principles when speaking of the source of their motivation while others mentioned pre-determined administrative plans and purposes. Differences in motivation may have added to the instability of the network. Noam and Tillinger (2004) suggest that the source of motivation for partnership collegiality may have an influence on the effectiveness of the

collaborative work. They predict partnerships working for the common good as a result of altruistic motivation will be more likely to achieve their purpose. Similarly, Fielding (1999) suggests collegiality driven by a commitment to the common good will be sustainable rather than the alternative scenario that is:

...not as deserving of attention or sustained interest once the task has been completed and the driving force of the unity dissipates, disappears or becomes tenuous (p. 17).

Transcript data from educational professionals revealed that many of them expected their networks to be sustained. Despite this expectation, social network analysis data and other transcript data provided evidence of instability in both partnerships. Low density and a fissure in the partnership structure of the Cluain partnership were observed at the second time point. A contributing factor to the unsustainability of some of the ties may be due to the varying sources of motivation for the aspirations of the network.

There was a minority group of educational professionals who stated different purposes of their collaboration and different understandings of the causes of educational inequity. This minority group consisted mainly of educational professionals who were not in positions of authority, but who had more than 16 years of teaching experience. This subgroup had a lower E-I index than those with less than 16 years teaching experience. Possible explanations for this finding are found in the work of Hargreaves (1992) who posits that a collaborative arena may include Balkanised cultures in which members of subgroups support one another to protect their practices, norms or values from being impinged upon by other subgroups. The work of Morris, Chen and Ling (2000) suggests there is a tendency for experienced teachers to interpret reform based on their previous experiences. Such previous experiences may not have had positive outcomes. Similarly, Day (2000) suggests older professionals may be influenced by experiences of alienation or an inability to cope. A limitation of this thesis is the lack of evidence from respondents to support possible explanations for the existence or activity of this particular subgroup.

Partnering to ameliorate educational inequity

A number of factors impacted the degree to which the partnerships were successful. Factors such as the degree to which pupils and educational professionals had the freedom to choose achievements in climates of acceptance; involvement in collaborative inquiry processes leading to changes in relationships and power structures; freedom to cross network boundaries and oscillate between closure and brokerage.

Using the capability approach as a foundation for understanding equity in education, insights are provided regarding teachers' uses of innovative pedagogies to increase opportunities for learners to freely choose achievements of value. Educational professionals encountered both support and challenges as they sought to implement new pedagogical approaches through involvement in school-to-school partnerships. Partnership participation facilitated the development of collective aims and values, changes to classroom practices and changes to power structures, as well as increasing demands on time for those involved. Changes appeared to have the greatest impact when educational professionals had the freedom to choose between a variety of networks and network positions.

Freedom to choose, acceptance of difference

The data from this study suggest educational professionals were afforded increased freedom and choice resulting in increased freedom for their pupils. In agreement with extant literature, the provision of increased freedom and choice allowed for greater acknowledgement and acceptance of diversity and difference (Nussbaum 2000). The findings regarding the importance of providing the freedom for pupils to draw on different identities and funds of knowledge, rather than striving to produce identical mathematical experiences for all, is also supported by the research of Raffo (2011). Increasing pupil freedom while engaged in mathematics and reading led to increased well-being and flourishing as advocated by the pupils in the focus groups of this study. This finding supports emerging literature that applies the capability approach to classroom contexts and demonstrates increased opportunities for equitable education as a result of building on a learner's set of capabilities (Adair 2014; Walker 2016; Unterhalter 2003). In support of the work of Adair (2014), increased opportunities for problem solving and leadership afforded the development of a capability space. This allowed pupils to do mathematics and reading more freely and autonomously (Walker 2016). It was the school communities that provided their own resources and conversion factors. Mechanisms of control in the form of conversion factors were evident when both pupils and educational professionals were able to present their arguments without ridicule. Everyone involved knew that they could expect to experience criticism in a safe environment and participate cooperatively (Piaget 1932/1965). These collaborative learning communities fostered learning environments where pupils and teachers learned together (Fielding 1999).

A limitation in this study was the lack of data regarding differential benefits for disadvantaged pupils. The nature of the research design was such that new initiatives (CGI and Reciprocal Reading) were chosen specifically for the benefit of children in disadvantaged areas. In the case of CGI, it was chosen to help children who may have been struggling with the literacy component of mathematical problem solving due to having English as an additional language. Reciprocal Reading was chosen as an approach to help specifically target those pupils who were falling behind their classmates in reading and comprehension. These children, however, were not the only children to experience CGI and Reciprocal Reading. CGI was used for the entire class of pupils. The nature of the research design meant that data were not collected to support any claims regarding differential benefits for disadvantaged pupils. From the extant literature, children from less disadvantaged backgrounds may have already developed problem-solving skills (Bernstein 1970). Conversations experienced in the homes of less disadvantaged pupils may have encouraged the type of dialogue and problem solving being promoted in the new initiatives (Lubinski 2000). This study provided evidence of teachers and pupils benefiting from changes to pedagogy and professional development practices, but the data from this study were unable to specify which pupils benefited most.

Collaborative inquiry

The findings revealed that teachers and learners benefited most when teachers spent time collaborating outside of their own classrooms during the school day, not after the school day, or during professional development days, but in classrooms while schools were in operation. Teachers emphasised the benefits of activities such as collaborative action research and Lesson Study which involved teachers teaching and learning alongside pupils. This required supply teachers to provide opportunities for teachers to travel to other schools and local authorities during the school day. These findings support the literature stating that successful collaborative inquiry takes place in school classrooms over an extended period of time (Sachs 2000; Day 2000; Cordingley et al. 2003; Drew, Priestley and Michael 2016; Snow et al. 2015).

Participation in collaborative inquiry resulted in the sharing of resources (Lieberman et al. 2000), a greater willingness to reveal weaknesses and to take risks (DfES 2005; Ainscow 2016) and changes to power structures (Drew, Priestley and Michael 2016). For example, the collaboration was managed and directed by teachers, but supported by headteachers and local authorities. This was evidenced by data such as the E-I indices that revealed LA

staff and headteachers were having more conversations with teachers than with one another thus suggesting a co-dependency. LA staff and headteachers were dependent upon teachers to produce data from their collaborative inquiry and teachers were dependent upon headteachers and LA staff to support their involvement in collaborative processes. The management and direction by teachers was also suggested by the in-degree and betweenness results that revealed teachers, rather than local authority officers or headteachers, were positioned centrally. Collaborative inquiry and Lesson Study provided teachers with power through data to prove the impact of new initiatives. These findings support the literature stating that collaborative inquiry results in changes to power structures and hierarchies (Drew, Priestley and Michael 2016). The diminishing of negative social conversion factors such as hierarchies and power structures was a prerequisite to the development of capabilities, as supported by Robeyns (2016).

An unanswered question remains about whether or not the innovations in pedagogical approaches would have come about without school involvement in a partnership programme. It is possible that Alasdair from the Cluain partnership (where the idea to use CGI originated) may have independently decided to begin using CGI even if he had not been involved in SIPP; however, the fact that he was involved in SIPP meant that he was in a different position as a result of changes to the power structure. For example, being involved in SIPP meant he had the support of teachers, headteachers and local authority officers from his own as well as other schools. This support provided nudges, resources, sounding boards, observers and expertise that would not have been easily accessible otherwise. This teacher not only shared his experience of using CGI with several others in his own partnership, but also with many more local authorities. This sharing may have happened to a certain degree without SIPP, but the extent and speed at which it spread appeared to be the result of SIPP activities and events.

Crossing boundaries

Both of the partnerships in this study involved collaboration across school boundaries, employment positions and sometimes across local authority areas. In agreement with the literature there were a number of benefits experienced by participants in these networks due to the extended range of their networking. Rather than network members being constrained by the competing priorities and beliefs characteristic of networks within a single school (Scottish Government 2009), educational professionals benefited from a new shared space defined by shared priorities and beliefs (Ainscow 2012b).

Benefits of involvement in networks with greater range included the opportunity to share context specific knowledge with a greater number of educational professionals (Ainscow 2012b). This was evidenced in the sharing of context appropriate knowledge such as CGI, Reciprocal Reading and Lesson study, each of which was found to be effective in a particular context and then shared with a number of other schools and local authorities in similar contexts.

The findings suggesting that educational professionals working outside of their own school or local authority were afforded a number of benefits supports the work of Noam and Tillinger (2004) who explain that a space for collaboration outside of participants' places of origins has the potential to be defined by compromise and negotiation. Educational professionals networking outside of their school and/or local authority demonstrated risk-taking, creativity and innovation. The innovative environments in which teachers were able to experiment with CGI, Reciprocal Reading and Lesson Study were non-bureaucratic intermediary spaces. The local authority's chain of command that normally would have maintained greater control from the local authority and from headteachers was disrupted. This change was expressed by headteacher Morvyth, "[I]n the past I would feel like I need to tell them [teachers] what to do". A member of the Abhainn partnership also mentioned the role of teachers, "[Y]ou have to give your staff an opportunity to have time, but also value them as professionals". These educational professionals who previously said they needed to tell teachers what to do were instead giving them an opportunity to have time and be valued as professionals.

The individuals who were most actively making connections in these intermediary spaces were identified using measures of betweenness, transcript data and observations. Measures of betweenness were able to indicate individuals who were positioned to broker knowledge and resources with other educational professionals listed on the SNA questionnaire. Additional data from transcripts and observations revealed individuals who had been brokering knowledge and resources between other partnerships such as Una and Magaidh from the Abhainn partnership.

Educational professionals such as Deirdre, Ceitidh, Mhairi (Cluain partnership) and Dorcas, Una and Magaidh (Abhainn partnership) developed ties outside of their own school, local authority or employment position group. As a result they were able to broker

across structural holes and share non-redundant or innovative information regarding Lesson Study, CGI and Reciprocal Reading. This finding supports the work of Burt (2001) who argues that external ties, particularly across structural holes can generate non-redundant, creative and innovative information and activity.

The advantages of these brokering spaces of low network density or low grid are also advocated in the literature of Reagans and McEvily (2003) and Smedlund (2008) who describe the potential for emergent knowledge to be conveyed to diverse audiences. This literature is supported by the findings of this study which demonstrate that interactions between local authorities and schools resulted in innovative ideas being spread across wide audiences.

A limitation of the SNA data was its inability to show betweenness with educational professionals in other partnerships. A limited number of the questionnaire and interview responses mentioned people and sources of power outside of the sociogram.

Network oscillation

The networks and subgroups were compared to identify where there were spaces less conducive to structural holes. Places of higher density and higher social cohesion were expected to have less brokering and consequently less diversity of ideas and freedom (Maroulis and Gomez 2008). Burt (1992) suggests innovative networks might have more brokering across structural holes, whereas existing knowledge networks may demonstrate more closure. If closure is measured to be high it may indicate a myopic perspective preventing group members from having the freedom to take innovative risks (Maroulis and Gomez 2008). Social network data were collected regarding innovative knowledge exchanges and existing knowledge exchanges. Measures of closure and brokering were similar for both innovative knowledge and existing knowledge networks. There were external ties that extended beyond the schools to individuals who were not involved in this research making it difficult to compare measures of closure and brokerage, however, the similarity between the measures may suggest an averaging out between brokerage and closure. This interpretation would be consistent with recent work suggesting an oscillation between closure and brokering optimises the network's innovation and productivity (Burt and Merluzzi 2016; Carnabuci and Bruggeman 2009).

Summary

Both pupils and educational professionals reported positive changes to leadership structures, increased trust, an increased willingness to reveal vulnerability and an increased recognition of difference. These positive conversion factors supported the conversion of resources into capabilities such as the freedom to pursue different and valued approaches. Pupils reported increased opportunities for useful and rigorous dialogue with their peers while teachers reported increased trust and risk-taking among colleagues.

The new approaches to tackling educational inequity in maths and reading were subject-specific interventions, but they had significant overlap and similarities that included acknowledgement of different approaches and the fostering of autonomy of both pupils and educational professionals. The strengths of these new initiatives appeared to be their values-based approaches. Gaining a greater understanding of the relational processes that supported these changes illuminates the support required by pupils, educational professionals and systems to increase collaboration in Scotland's disadvantaged areas for the purpose of increasing student achievement.

Chapter Nine: Conclusion

This thesis posed the question: What is the potential of school partnerships to ameliorate educational inequity? This question was posed in the context of a government initiative to address gaps between the assessment results of pupils living in various levels of deprivation across Scotland. Issues of inequity were examined in this study using the capability approach because it afforded opportunities to examine not just the initial resources that contribute to inequities, or the final outcomes indicative of inequity, but also the dynamic processes and conversion factors that have the potential to bring change.

My research study was a mixed methods study of the experiences of educational professionals and pupils who participated in a school-to-school partnership programme over three years. The study used social network analysis, questionnaires, interviews and focus groups to provide evidence of the positive impact of the partnerships, as well as the limitations and challenges faced during the funded period of the programme.

The findings pertaining to the first research question support the work of Fielding (1999) and Noam and Tillinger (2004) regarding the benefits of establishing agreed aims, values and motivations. The findings also support the literature regarding the potential of positive conversion factors to increase opportunities for the development of capabilities (Sen 1999; Robeyns 2016; Nussbaum 2000; Adair 2014). The observed impact of staff turnover and the pressures caused by accountability measures support the research of Finnigan, Daly and Liou (2016).

In answer to the second research question, regarding the influence of the social network structures of the partnerships, the findings support the proposition that network oscillation (Burt and Merluzzi 2016; Carnabuci and Bruggeman 2009) may be a necessary condition for the brokering of innovative knowledge.

Due to the nature of the collected data the final research question regarding the impact on pupil achievement was not addressed through quantitative methods, but was instead subsumed as part of the first research question.

Collectively the findings from the three research questions in this study have implications for educational policy, practitioners, equity research, partnership research and SNA research as discussed in the sections below.

Implications for SNA research

The density and E-I indices were very similar for the existing knowledge networks and the innovative knowledge networks suggesting the possibility of network oscillation causing an averaging out of these measures. A further study could consider the impact of planning support for oscillation in the beginning stages of a school partnership. This could be an iterative process over an extended period including time and support for the development of trust and existing knowledge exchanges paired with time for the development of brokerage across structural holes to encourage sustainable innovation.

These findings have methodological implications for the use of SNA for research regarding educational inequity and school partnerships. Sociograms and measures of density, in-degree, betweenness and E-I index were able to reveal the instability of the partnership over time that was not yet visible through other methods of data collection. In addition, the use of sociograms during interviews and focus groups with participants allowed for a unique approach to stimulate conversations regarding network structure.

Despite these benefits of SNA both of the partnerships extended beyond what the social network analysis was able to report. Through interview, focus group and questionnaire data it was evident that some of the educational professionals were in brokering positions unseen on the sociograms. These findings suggest the importance of using a mixed methods approach.

Implications for equity research

This study supports the emerging literature that suggests the capability approach is a suitable means of evaluating educational equity (Adair 2014; Walker 2016; Unterhalter 2003). This study operationalises the concept of educational equity using the capability approach and demonstrates its suitability for identifying the potential for the development of capabilities in both educational professionals and pupils in primary schools.

Implications for practitioners

This research provides a contribution to the literature regarding pedagogical approaches supporting equitable education. The implications for teachers include the findings that

suggest pupils can benefit from classrooms where there is recognition and acceptance of difference, the freedom to choose different methods and the opportunity to participate in useful and rigorous classroom dialogue regarding those choices. Classroom initiatives that were demonstrated to be successful included Cognitively Guided Instruction for mathematics, Reciprocal Reading and Lesson Study as a guiding structure for teacher collaboration.

Implications for research regarding school partnerships

Educational professionals require purposeful connections with those who share their aspirations, as well as the freedom to move between a variety of networks. Movement between close, trusting networks must be balanced with movement between diverse and unknown networks to support the mobilisation of innovative and existing knowledge. A nation-wide vision for a network may fit the criteria for being a shared vision, but it may not be specific enough or dynamic enough to fit a particular context. Flexibility and movement are required in each of these three components: purpose, network closure and structural holes. In an ever-changing context, the purpose must be sufficiently flexible enough to suit both the circumstances and the individuals involved. Similarly, network members must be able to move between trusting networks of closure and innovative spaces of brokering.

To demonstrate these characteristics of effective partnerships a suitable typology should represent motion. Using Stoll's (1999) suggestion that schools are never standing still, so a suitable typology allows for motion either towards or away from a shared purpose. Key to this ability to move towards a purpose is the ability to create the conditions for brokering in intermediary spaces and across structural holes. The process of moving towards a purpose or the process of creating an intermediary space, are not discrete events. For this reason they are best represented using a continuum along an axis. For example, a typology may be used in which x, y, and z-axes represent the movement away from or towards a shared purpose, network closure and across structural holes.

The x-axis (structural holes) represents the movement of the partnership between minimum and maximum numbers of opportunities for brokering structural holes. The y-axis (purpose) represents the degree to which a collective moral purpose is shared. The z-axis (network closure) represents the movement of the partnership between minimum and maximum network closure.

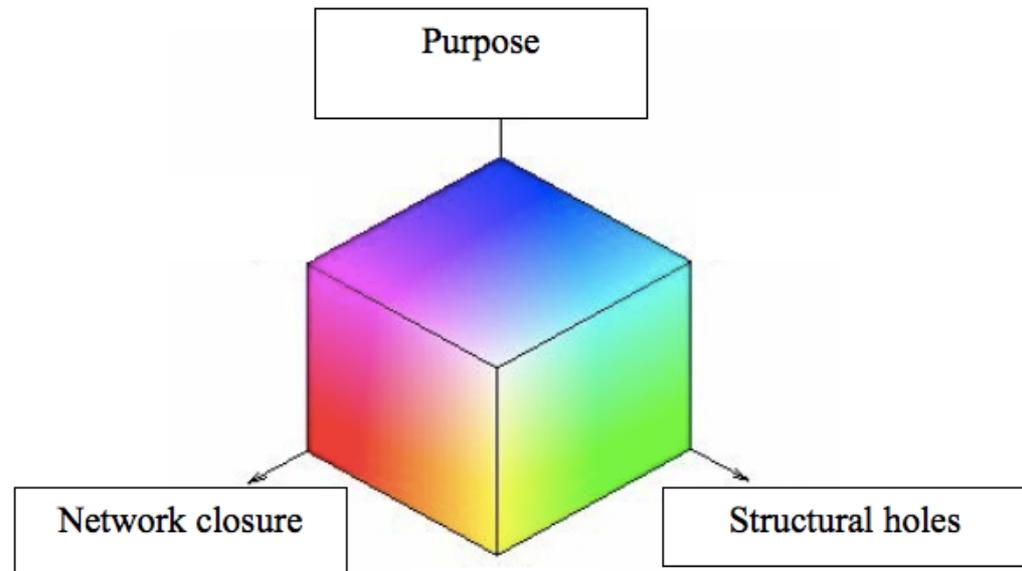


Figure 19: A 3-dimensional typology of school partnership

Using this typology, an ineffective network is one in which its position along one or more axes is stagnant. In addition, in an ineffective network each of the three components could potentially be positioned at either a minimum or maximum end of an axis. If every component were simultaneously at a minimum position, the locus of the partnership would be the white coloured origin where the axes meet. A much more effective network exists between corners, in continual motion and in colourful positions. It oscillates between maximum and minimum network closure, maximum and minimum structural holes and between a purpose that it either shared broadly or uniquely context-specific. By remaining in constant motion a network is unlikely to be found at an extreme end of an axis. Put simply, effective networks, by remaining dynamic and oscillating are likely to be colourful networks that stay inside the box.

Oscillation here is not chaotic, but a positive dynamic as explained in the findings. Feeling under threat as a result of external forces, lack of resources, and accountability pressures drives partnerships to extreme positions of high network closure. Educational professionals require supportive environments.

Implications for policy

Some of the partnerships appeared to be driven to positions of low network closure as a

result of staff changes and turnover. The secondment or promotion of relatively new staff members should be avoided by providing other opportunities or incentives to encourage stability within school staffing teams and increase network closure in these contexts.

To support opportunities for educational professionals to broker structural holes they require support to move between schools and local authorities. In both partnerships Lesson Study proved effective for the movement of educational professionals which created opportunities for learning, innovation, and evidence gathering. Increased training in the use of Lesson Study or other forms of collaborative inquiry would enable teachers to collect valuable evidence and evaluate the potential for more equitable classrooms. In addition to providing opportunities for training in Lesson Study or other methods of collaborative inquiry, schools would benefit from the provision of supply teachers to cover classes. Collaboration that took place in classrooms during school hours was the most beneficial, but also the most difficult to coordinate since it required supply teachers to be funded to cover classes. At the end of the funding period of the SIPP it was evident that a new initiative (The Attainment Challenge) was being funded and involved the secondment of teachers and deputy headteachers to do administrative or other work outside of the classroom or even out of their schools. Further research is required to compare the amount of funding spent on these secondment positions compared to funding spent on supply teachers for collaboration and which funded activity was more beneficial to pupils in the long run.

One of the enduring challenges of collaboration is the sustaining of new relationships, connections, and ways of working. Issues that appeared to influence the sustainability of the SIPP partnerships were the motivation of the participants; external pressures experienced by teachers; and support from headteachers, local authorities and other outside sources. The motivation of some of the educational professionals appeared to be associated with an understanding of the challenges facing pupils and their families. While motivation cannot be mandated, it *is* possible to provide more extensive education for teachers, headteachers and local authority officers regarding the challenging situations of pupils and families in disadvantaged areas. By sharing knowledge of the realities of disadvantage, educational professionals may become more unified in their motivation to participate in collaboration and in their hopes for such efforts. Time spent mobilising knowledge of poverty and disadvantage may be beneficial to the sustainability of future partnerships.

External pressure experienced by teachers as a result of accountability and assessment requirements limited teachers' willingness to take part in (or their willingness to continue) innovative approaches. To encourage teachers to engage in more equitable approaches they must be offered broader means of assessment that can demonstrate the incremental improvements taking place in classrooms. To reduce the negative effects of accountability pressures, new policies are needed to broaden capability sets using sample-based assessments, social-emotional learning indicators and student, parent and community engagement indicators. These types of measures have the potential to highlight equitable education. By unveiling success in disadvantaged schools, these measures would help to reduce inequities.

Despite a positive reception by policy makers of each annually published SIPP evaluation the findings did not appear to be implemented by policy makers. Rather, there appeared to be a lack of coherence as SIPP competed with other initiatives such as Raising Attainment for All (RAFA) and the Attainment Challenge. These other initiatives did not have a clear focus on the engagement of educational professionals with collaborative inquiry in classrooms. RAFA had a narrow focus on improvement science, while the Attainment Challenge involved the secondment of educational professionals to participate in collaboration outside of classrooms.

Several questions remain to be resolved regarding the subgroup of teachers with more than 16 years teaching experience. Why did so few of these teachers hold positions of high in-degree or betweenness when compared to teachers with less experience? Even after teachers with less experience were promoted or left the networks, the teachers with more experience did not fill the roles of the reticulists. Further studies are required to establish means of better supporting teachers with more than 16 years of experience to broker relationships regarding innovative initiatives.

Conclusion

Despite the many challenges facing schools in disadvantaged areas, this study suggests school-to-school collaboration is a starting point for the development of capabilities, and consequently an opportunity for the potential to increase equity, for both educational professionals and their pupils.

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Appendix A: Publications arising from this research

- Chapman, C., Chestnutt, H., Friel, N., Hall, S. and Lowden, K. (2017) Teachers leading educational reform through collaborative enquiry in Scotland. In A. Harris, M. Jones, J. Huffman, (Eds.) *Teachers leading educational reform: The power of professional learning communities* (11-31). London: Routledge.
- Chapman, C., Chestnutt, H., Friel, N., Hall, S. and Lowden, K. (2016) Professional capital and collaborative inquiry networks for educational equity and improvement? *Journal of Professional Capital and Community*, 1(3), 178-197.
- Chapman, C., Lowden, K., Chestnutt, H., Hall, S., McKinney, S. and Friel, N. (2016) The School Improvement Partnership Programme: Sustaining Collaboration and Enquiry to Tackle Educational Inequity. Project Report. Livingston: Education Scotland.
- Chapman, C., Lowden, K., Chestnutt, H., Hall, S., McKinney, S., Hulme, M. and Friel, N. (2015) *The School Improvement Partnership Programme: Using Collaboration and Enquiry to Tackle Educational Inequity*. Project Report. Livingston: Education Scotland.
- Chapman, C., Lowden, K., Chestnutt, H., Hall, S., McKinney, S., Hulme, M. and Watters, N. (2014) *Research on the Impact of the School Improvement Partnership Programme: Using Collaboration and Enquiry to Tackle Educational Inequity*. Phase 1 Report to Education Scotland. Project Report. Livingston: Education Scotland.

Appendix B: Questionnaire (paper adaptation of online version)**TACKLING EDUCATIONAL INEQUITY USING
SCHOOL COLLABORATION****Questionnaire for educational professionals (SNA)**

Dear Colleague,

To find out about important facets of the working of school partnerships, Social Network Analysis (SAN) can provide a useful perspective. For this approach to work successfully people need to provide their own name and the names of others with whom they network within their SIPP activity. I have put a number of safeguards in place to ensure your confidentiality. As soon as the questionnaires are received your name and the names of all other individuals, schools and local authorities will be replaced by codes so that no person or institution will be identifiable.

This type of survey is dependent on a very high response rate from participants to enable the construction of the network maps.

No one will have access to the identifiable data except for the researcher, and in all reports and publications no identifiable information about you, your school or your local authority will be given. This, and all of the research, adheres to the ethics agreement of the partnership programme, the University of Glasgow ethical guidelines and the British Educational Research Association guidelines.

Your cooperation with the research activity is greatly appreciated and will also inform your own partnership work, as well as the overall programme. Participation is voluntary and you are free to refuse to participate without consequences for you. Your participation implies your consent for your responses to be included in the analyses. The results of the study will be submitted electronically and in hard copy to the University of Glasgow.

If you would like to have further information about any aspect of this research project please do not hesitate to contact me by email: h.chestnutt.1@research.gla.ac.uk

If you have any concerns regarding the conduct of the research project you are encouraged to contact the College of Social Sciences Ethics Officer: Dr. Muir Huston, Muir.Huston@glasgow.ac.uk

SECTION 1: About you

1. What is your first name? _____

2. What is your last name? _____

3. Are you? (*tick one box*)

Male Female

4. Age group....? (*tick one box*)

21–25 26–30 31–35 36–40

41–45 46–50 51–55 56–60

61+

5. Are you a....? (*tick one box*)

Headteacher

Depute/Assistant Headteacher

Principal teacher

Teacher

Other, please specify professional partner e.g.:
partner education psychology, CLD,

6. How many years have you been a teacher? (*tick one box*)

- I am fully qualified and have been teaching for up to 5 years.
- I have been teaching for between 6 to 15 years.
- I have been teaching for 16 or more years.
- I have never been employed as a teacher.
- I am not currently employed as a teacher, but I was a teacher in the past. Please indicate how many years you were employed as a teacher.

7. Please indicate which Authority you work for? (*tick one box*)

(The possible answers have been deleted to protect the identity of the local authorities.)

8. If you work at a school, please indicate the name of your school:

9. Please indicate which statement best describes your role within your partnership?
(Please tick as many categories as necessary.)

- Initially I was involved in coordinating the partnership, but this does not describe my current involvement.
- Initially I had a role in implementing some of the partnership activities, but this does not describe my current involvement.
- I am currently responsible for coordinating partnership activity.
- I currently have a role implementing some of the partnership activities.
- I currently have a role conducting research and inquiry regarding the partnership activities.
- I have never had an active role within this partnership.
- Other current or past involvement, please specify:

SECTION 2: Educational inequity

10. What type of educational inequity has your partnership been designed to remediate? (Please tick as many categories as necessary.)

- Pupil attainment
- Pupil health and well-being
- Pupil opportunities
- Pupil aspirations
- Parental involvement
- Not sure
- Other (please specify):

11. Thinking about the factors which contribute to educational inequity in your context please indicate the extent to which you agree with the following statements.
(Tick one box on each line)

Educational inequity in our school is a result of ...	To a large extent	To some extent	A little	Not at all	Don't know
Pupils' family circumstances.	<input type="radio"/>				
Pupils and/or parents learning English as an additional language.	<input type="radio"/>				
Pupils' additional support needs.	<input type="radio"/>				
Insufficient and/or inadequate school resources.	<input type="radio"/>				
Competition between schools or local authorities.	<input type="radio"/>				
An emphasis on assessment or examination results.	<input type="radio"/>				

12. Thinking about suitable approaches for fostering educational equity in your context please indicate the extent to which you agree with the following statements.
(Tick one box on each line)

Teachers seeking to foster educational equity can be best supported by providing ...	To a large extent	To some extent	A little	Not at all	Don't know
opportunities for teachers to collaborate with teachers in their own schools to learn and share effective approaches.	<input type="radio"/>				
opportunities for teachers to collaborate with teachers in other schools.	<input type="radio"/>				
opportunities to collaborate with other local authorities.	<input type="radio"/>				
Opportunities to collaborate with other sectors (primary with secondary; teachers with social workers and health professionals, etc.)	<input type="radio"/>				

13. Thinking about how your partnership is tackling inequity, which of the following statements is closest to your view?

- The project is gathering pace and making good progress.
- The project is progressing at an even pace.
- Momentum is slowing and progress is stalling.
- I'm not sure how the project is developing.

SECTION 3: Networking

14. Thinking about your experience of working within a partnership, please indicate which of the following benefits you or your pupils have experienced. (Tick as many as apply.)

- Access to additional resources.
- Awareness of inequality in education.
- Opportunity to use inquiry and evidence gathering to inform my teaching practice.
- Increase in pupils' achievement.
- Increase in pupils' aspirations.
- Opportunity to recommend an approach to another teacher or professional.
- Opportunity to learn new approaches to learning and teaching.
- Other (please specify):

Guidance on completing Social Network Analysis questions

The following questions will distinguish between two types of teacher knowledge: knowledge which is new to you and others in your school compared to knowledge which is not new, but has recently been shared within the group. Those ideas which are brand new will be described as new and innovative. Those ideas which are not new to everyone, but which have recently been shared between two or more people will be described as tried and tested.

Please choose names by indicating on the lists provided. You may choose as many people as necessary.

15. Since becoming involved in the SIPP programme have you discussed (with any staff members from your partnership) tried and tested ideas or resources that had already been known by you or someone else?

- Yes
- No

16. With whom have you discussed tried and tested ideas or resources? (tick as many people as necessary)

(The list of names which appeared under this question have been deleted to protect the identity of the participants.)

17. Since becoming involved in the SIPP programme have you collaborated with any staff members from your partnership to discuss or create new or innovative approaches?

- Yes
- No

18. With whom have you collaborated regarding new or innovative approaches? (tick as many names as are applicable)

(The list of names which appeared under this question have been deleted to protect the identity of the participants.)

19. Since becoming involved in the SIPP programme have you and any staff members from your partnership discussed issues related to educational inequity?

- Yes
- No

20. With whom have you discussed issues related to educational inequity? (tick as many names as are applicable)

(The list of names which appeared under this question have been deleted to protect the identity of the participants.)

21. Is there anyone else with whom you have discussed ideas as a result of your involvement with SIPP? (For example, learning assistants, school psychologists, teachers and staff from other local authorities, community learning development staff, Education Scotland or university staff, etc.)

- Yes
- No

22. Please name those people not yet named with whom you have discussed ideas as a result of your involvement with SIPP? (For example, learning assistants, school psychologists, teachers and staff from other local authorities, community learning development staff, Education Scotland or university staff, etc.) If you do not know their name, please describe their role or the context in which you spoke with them.

23. Thank you for taking the time to complete this questionnaire.

Please use this space to make any final comments:

Appendix C: Interview schedule for educational professionals

Educational professionals Interview themes

Preamble:

- Thank-you for:
 - your time,
 - willingness to be interviewed today.
 - for completing the questionnaire
 - encouraging others to complete it.
- As you know from the questionnaire I'm interested in approaches to tackling educational inequity. By educational inequity I mean the social and economic situations of some pupils that make it much more difficult for them to succeed at school.
- To start our discussion, I have a list of questions, but please free to add anything else that comes to mind.

Section 1

Q1.1 The questionnaire results suggested that the focus of the partnership was to tackle educational inequity by improving pupil attainment.

a) Would you agree with this? Would you say that the purpose of the partnership changed at all over time or remained constant?

b) What type of assessments of pupil achievement were used (or could be used) to demonstrate the success of the partnership?

Section 2: Sharing sociograms

I have used the questionnaires to create drawings or sociograms of the partnership. The pink squares represent people from -- Council and the black squares represent -- Council. The lines connect them to people they have talked with. The lines do not have arrows to specify a direction so either of these two people could have mentioned the connection.

Q2.1 If we compare these first two sociograms – one shows the conversations about educational inequity and the other shows conversations about innovative and new ideas – it appears that there were more conversations about innovative ideas.

Would you agree with this interpretation? Any ideas why this was the case? Did some of these conversations happen more often – resulting in more lines?

Q2.2 It also appears to me that the members of the partnership from -- Council were more integrated in the inequity conversations; whereas, conversations regarding new ideas happened more within schools or local authorities?

Would you agree with this interpretation?

Q2.3 The location of these people in the middle with several connecting lines suggests that the key leadership positions were occupied by people from -- Council.

a) Would you agree with this interpretation?

b) Has this leadership structure changed over time? Would a before and after picture look any different?

Would you like to know which square represents you?

This suggests you were involved in a large number of the conversations regarding innovative ideas and also a large number of conversations regarding inequity. Can you tell me more about these conversations?

- a) For example, can you suggest which innovative or new ideas were the focus of most of your discussions?
- b) Regarding inequity, can you remember the focus of some of these conversations?
- c) Were there any factors which enabled the discussions to take place or to bear fruit? School level factors? Local authority level factors? National level factors?
- d) What role did your Local Authority take on in your partnership?

Q2.4

In the life cycle of this partnership, when would you say most of the conversations regarding equity took place? Or do you think they happened over an extended period of time?

- (a) Can you help me to order these three sociograms chronologically?
- (b) Can you help me to rate these types of conversations in terms of their significance for the effectiveness of the partnership?
- (c) Can you envision a different structure that would have been more effective?
- (d) What would you say this partnership did best?

Q2.5

- a) Were there any challenges or blockages that prevented new approaches from being found or tried or passed on?
- b) Before you became involved in the SIPP did you have any contact with people outside of your own local authority?

Section 3

Q3.1 Do you feel that the use of these sociograms was helpful in any way?

Q3.2 Any other comments?

Thank-you very much for your time.

Appendix D: Focus group schedule for pupils - Reading

Introduction

- Over the course of the past year or two your teachers have been working with each other, with parents/carers and with teachers from other schools to share good ideas about reading/maths. I'd like to invite you to answer a few questions about your reading lessons.
- The next part I am going to say is very important: It is your choice if you do or don't want to answer the questions.
- Your names will not be identified in my research. This way nobody will know which answers you provided. At the end of the research I'll write up a report and your school will have the opportunity to get some information on the findings if they wish.
- Do you have any questions?

1. Can I use the voice recorder? Can you please say your name and age?
2. Throughout your READING LESSONS in P5,6,7 have there been times when you've used Fab Four Reading Windows? Think Aloud? Predicting, Clarifying, Questioning, Summarizing?
3. Have any of these approaches helped you? Provided you with:
 - a) more freedom?
 - b) more freedom/opportunities to participate in class?
 - c) more enjoyment?
 - d) more confidence reading?
 - e) opportunities to help each other (take on the role of a teacher)?
 - f) Do you think these activities make it fairer for everyone to do well in reading?
 - g) Why?
4. What are the types of activities you like? What types of materials do you like to read (books, newspapers, magazines, etc.)?
 - a) Do you have a choice of what you read?
 - b) What do you choose? Why?
3. How do you know if you're ability to read has improved? How does your teacher know? How do your parents know? Do you prefer or value some of these methods of assessment more than others?
5. Have you ever chosen to spend time helping your classmate learn rather than spend time on your own learning?
6. Do you have any other comments?
7. Thank-you.

Appendix E: Focus group schedule for pupils - Maths

Introduction

- Over the course of the past year or two your teachers have been working with each other, with parents/carers and with teachers from other schools to share good ideas about maths. I'd like to invite you to answer a few questions about your maths lessons.
 - The next part I am going to say is very important: It is your choice if you do or don't want to answer the questions.
 - Your names will not be identified in my research. This way nobody will know which answers you provided. At the end of the research I'll write up a report and your school will have the opportunity to get some information on the findings if they wish.
 - Do you have any questions?
1. Can I use the voice recorder? Can you please say your name and age?
 2. Would you say that your teachers teach maths (or problem solving) to you differently now than before? If yes, how have your maths lessons changed?
 3. What is good about this change? What is not so good?
 - a) more freedom to choose the method to solve a problem?
 - b) more freedom/opportunities to participate in class?
 - c) more enjoyable?
 - d) do you feel more confident doing maths now?
 - e) opportunities to take on the role of a teacher?
 4. How do you know if you're ability to read has improved? How does your teacher know? How do your parents know? Do you prefer or value some of these methods of assessment more than others? How is your maths ability assessed?
 5. Have you ever chosen to spend time helping your classmate learn rather than spend time on your own learning?
 6. Some people think it might be more difficult for pupils to understand maths problem solving questions if English is not the first language they learned. Do you think this is true?
 7. Do you have any other comments?
 8. Thank-you.

Appendix F: Consent form for educational professionals



Consent Form for Educational Professionals

Title of Project: Tackling educational inequity using school collaboration

Name of Researcher: Hannah Chestnutt

1. I confirm that I have read and understand the Participant Information Sheet for the above study and have had the opportunity to ask questions.
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.
3. I acknowledge that all participants will be referred to by pseudonym (false name) in any publications arising from the research.
4. I acknowledge that interviews may be audio-taped.
5. I agree / do not agree (delete as applicable) to take part in the above study.

Name of Educational Professional

Date

Signature

Name of Researcher

Date

Signature

Appendix G: Consent form for parents/carers of pupils



Consent Form for Parents/Carers on behalf of their son/daughter

Title of Project: Tackling educational inequity using school collaboration

Name of Researcher: Hannah Chestnutt

1. I confirm that I have read and understand the Participant Information Sheet for the above study and have had the opportunity to ask questions.
2. I understand that my child's participation is voluntary and that I am free to withdraw consent at any time, without giving any reason and my child is also free to withdraw at any time, without giving any reason.
3. I acknowledge that all participants will be referred to by pseudonym (false name) in any publications arising from the research.
4. I agree / do not agree (delete as applicable) to take part in the above study.
5. I agree / do not agree (delete as applicable) to allow my child to take part in the above study.

Name of child

Name of Parent/Carer

Date

Signature

Name of Researcher

Date

Signature

Appendix H: Summary of SNA metrics

	Partnership A - innovative	Partnership A - existing	Partnership B - innovative	Partnership B - existing	Partnership A - time point 2 - innovative	Partnership A - time point 2 - existing
Density	0.173 (overall density of 17%. only 17% of possible ties in the network existed. Low interaction.)	0.196	0.085	0.137	0.057	0.108
E-I index (closure)	School pink = - 0.290 blue = - 0.253 LA = 1.000	school pink = - 0.631 blue = - 0.373 LA = 0.600	bigger Authority -0.369, smaller authority 0.326 (p < 0.1)	smaller auth 0.243 bigger author - 0.307	school pink = - 0.969 blue = - 1.000 LA = 1.000	school pink = - 0.832 blue = - 0.600 LA = 1.000
Freeman Betweenness (normalised mean) (brokering?)	1.258 (subnetwork) high score 2 number with score 0 (>50%)	1.935 (subnetwork) high score 26 number with score 0 (17/39?)	1.753 high score 2 number with score 0 (14/33?)	2.642 high score 2 number with score 0 (10/33?)	0.573 high score 27 number with score 0 (26/47?)	1.331 high score 27 number with score 0 (20)
Freeman Degree Graph Centralization - as proportion (in-coming ties)	0.2052 (High score Ed. Prof. number 26, 16 many)	0.3231 high score 26	0.2080 high score 2	0.1523 high score 2, 5	0.1418 high score 26	0.2004 high score, number 26
Freeman Degree Graph Centralization_{Out}	0.4977 %) high scores number 2	0.4206 high score 2, 26, 28	0.8525 high score 2	0.8291 high score 2	0.3639 high score 27	0.3559 high score number 2

Appendix I: Qualitative data analysis grid

Research question	Codes and concepts	Pupil focus groups	Educational professionals
1	views/understanding regarding inequity	<p><i>fairer...”because when people are stuck you can help them out” (Girl, School ReadingR)</i></p> <p><i>fairer...”Because if you don’t know what a word means you can be like asking your friend, looking in the dictionary, using the words around it to see if it makes any sense or replacing it with a word that’s similar to see if that what you’re thinking of” (School Reading A)</i></p>	<p><i>“Work out what your aim is and make sure it’s a joint aim because if you’re not committed to the aim ...If you’re not committed to the aim of the project you’re not going to be committed to the project.” But “advice I would give somebody, collective aim and if you don’t have a collective aim don’t do the partnership...As long as you’ve got a collective aim and you’ve got a plan then I think it will work. (see other quote where she says original aim was a ‘bit muddy’ numbr 6, partnership B, 16+)</i></p> <p><i>How is it beneficial to be linked with a school outside of the cluster? Because of the context maybe. Because you come together for a shared reason. When you’re at a cluster that’s assigned to you because of location you do a lot together and you do work collaboratively a lot but the fact that this was for a shared reason this was different. Both schools had a shared interest in terms of developing the maths. (partnership A, teachers)</i></p> <p><i>I think starting small and having a long period of time to work through a project with the same theme running and not expecting results so quickly. (partnership A, head teacher?) I think we had the time to develop our relationships and to support one another and sometimes that doesn’t happen in schools. (partnership A, teacher < 16)</i></p>

			<p><i>Where I think on a regular basis people will be speaking on a regular basis about education inequality here. Even in the recent past we've had children who are asylum seekers coming in and are unable to afford swimming costumes and PE kit and teachers are going out and sourcing those things and linking into charity to see if we can get Christmas presents for children for Christmas. I can imagine if you're in an environment where that does happen you wouldn't speak about it as often because you wouldn't see it as much. (Alasdair)</i></p> <p><i>There's times where children come in without breakfast, after seeing violent incidents in their home, they're coming in where they feel they may have been neglected and you're trying to catch up on all of that as a community and you're still expected to get them though that level and their learning shouldn't be impacted but everyone needs to be in the classroom at the same time with ideas around inclusion (Alasdair)</i></p> <p><i>You can make it happen, but you have to make it a priority. And everybody has to believe and that's why I suppose you go back to the inequity one. If everyone believes that this is going to make a difference then they might invest That was setting the values of the project which is important. Once we'd set the values and why we were doing this. I think we'll re-visit that less possibly because it's more embedded in our thinking now..... It's in the Standard for Registration – you know that you are there to make a difference. (Beitris)</i></p> <p><i>For me the aim of the original SiPP project was a bit muddy. There was never a clear aim of what we were doing other than raising attainment. All of the training had nothing to do with raising attainment, bizarrely. For me the ultimate aim of the project was for us to build partnerships beyond and that in turn will help raise attainment. If that was the aim then it was definitely achieved rather than it being about just individual</i></p>
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			<p><i>schools and I think the poverty is almost irrelevant because it's raising attainment for all. And yes, we do want to close the gap, but the only way to actually raise people up or pull people down. And if you raise them up, you have to raise them up as well because that's good teaching. IF the projects' aim was to close than I don't think that will have been achieved.</i></p> <p><i>Have a clear aim, but we never knew what the aim was. (Una)</i></p>
1	recognition of difference	<p><i>"You can do it your own way whichever makes you feel better about your method. It makes me feel better - more confident about maths." (School MathC) "Everyone finds one method that works for them. Sometimes others can find new methods for you, but sometimes they don't work...I think it's pretty good that we all have our own methods so it's not like we'll be wrong." (School Math) "An evaluative question is your opinion... [we like those types of questions - with a right or wrong answer (school Reading A) "[We have more choice] ..because in P5 we never used to get evaluative [questions]." (girl, school reading A) "I think Reciprocal Reading is a good thing You share your ideas and no one will laugh at them" (School Reading A)</i></p>	<p><i>That was very valuable because every teacher clearly is different in the way they introduce the four strategies and as much as there is guidance there from the books it was really good to see other people's ideas and slant on it. To think that's great. I'm going to try that and hopefully everyone would come away with a bit of that because there was such a variety in the group from all three schools. So, it was very valuable. (Gillian)</i></p>
1	individual versus community values and needs	<p><i>"Sometimes if you help someone else because you might make the same mistake and if you're looking at someone else's work it's a different way of telling you got it wrong and you can fix it." (girl, School Math) "I find working in groups really nice because I can always help them and they can help me" (girl, School Reading) "When I was in a group there was a word skipping, but nobody knew what it was so I was able</i></p>	<p><i>I think we've all got our common purpose as well. I think when we knew that there's something to offer. I know that they've all got something to offer me. I think they obviously think that about each other. (Una)</i></p>

		<i>to help everyone figure it out” (girl School Reading)</i>	
1	<i>freedom to choose</i>	<p><i>“It’s more like a sense of freedom for your maths and I enjoy it a lot more now than I did a few years ago.” (School Math) “But I think it’s fun because there’s no right or wrong answer. You can say something and it won’t be wrong.” (School Math) “I think it’s more fun because there are way more things that you can do and also I find that the problems can be quite realistic sometimes and I think that can help because you can really visualize it” (School C) “I find it more fun because rather than being stuck with an algorithm which was boring” (boy, School C) “It does give you more freedom and there’s different ways of working it out so you can have your own way that suits you” (School C) “Before the teacher just teaches you a way to do it and then you just do it. But then last year when we did problem solving we got to choose which way we did it” (girl, School T) “...when you can do your own you can choose an easier way” (boy, School Math) “I made up my own way how to add it. My own machine” (girl, School T) “In some questions there are different sets of numbers to choose from” (girl, School T) “Sometimes you understand it better if you do it your own way” (girl, School T) “The teacher for questions about time for adding minutes and hours: she does it different and I do it different and other people do it different and she lets us do it our way. It feels easier” (girl, School T)</i></p>	<p><i>AUTONOMY/LEADERSHIP: And actually, have that dialogue. Don’t get me wrong I’m not saying that everything that we said went ahead, but we were involved and you know your opinion was recognized and acknowledged as opposed to you’re at the bottom of the totem pole. Just you go away and do a lesson on reading and I’ll tell you if it’s good or not. That dialogue was so enriched especially within here. And having the opportunity to go out on inset days with other professionals who it was new to. (Moire)</i></p> <p><i>I think it’s giving teachers the responsibility for leading the project and from my point of view giving them the time and the trust to be able to do that and not always be there with them telling them what to do, but setting the task, stepping back, letting them get on with it and then checking in. I guess its trusting the people that you’re giving that role to and also making sure that you keep it quite tight in terms of setting up meetings, setting timescales and giving them opportunity to meet, to check in with them regularly but not always having to be there looking over their shoulder and telling them what to do. They very much had, to an extent, the freedom to lead the project themselves given the overarching research questions and then giving them the time and the resources to research it themselves, trying it out and I think particularly the Lesson Study approach really helped that because they were actually coming together and planning together and then carrying out the Lesson Study and it meant they had really robust evidence for what was happening and what wasn’t happening and giving them the responsibility for that and not feeling that they were being told what to do (principal Partnership A, >16)</i></p> <p><i>We had started it [Reciprocal Reading] but our angle on it was more about personalization and choice (Una)</i></p>

1	<i>dialogue leading to difference</i>		<i>I think it's really beneficial because you might have a particular mindset in this school and then you went to another school and see that they have a different mindset. So, able to see that it's not all the same and that people are different. (Alasdair)</i>
1	<i>dialogue leading to assimilation</i>		<p><i>? "You know I cannae do that lesson. It didn't work in my class. So why did it work in your class and not mine?" So, it was the enrichment of the dialogue was really, really purposeful and helped to kind of move things along but again it's like everything it's all about good relationships isn't it. And I was very fortunate that the two ladies that I was matched up with ---. We clicked. We clicked. (Magaidh)</i></p> <p><i>I know from experience in this school, if they're very negative they can have a massive impact on all these other people from conversations they have or negative comments they have so it's trying to see how can they be more involved in a positive way rather than causing problems. (Alasdair)</i></p> <p><i>Did your involvement with another local authority change your relationships within your own school?</i> <i>I think it enabled me to explain that everybody was in the same situation. (Caitriona)</i></p>
2	<i>brokering</i>		<p><i>Because I'm a very nosey person. And when I see good practice I just go chapping on doors (Magaidh)</i></p> <p><i>Stealing ideas from them and passing them on to them. Because I was the main kind of person here because I was leading it so I was then having to share either what had happened at the seminars or just ideas from learning visits and things and sharing it back to our whole staff. (Moire)</i></p> <p><i>I'm nosey. I like to go outside the authority. (Una)</i></p> <p><i>I'm nosey so I'm like can you take us on a tour? Show us what you're doing? And off we went. (Una)</i></p>

<p><i>all research questions</i></p>	<p><i>blockages/inhibitors/challenges</i></p>		<p><i>And I think a lot of the schools in Renfrewshire backed out. the other schools backed out? I think because we initially went along and we thought it was moderation.... But it wasn't. (Magaidh)</i></p> <p><i>The first event I wasn't part of and it hadn't really been thought through in terms of what we were trying to achieve. (Dorcas)</i></p> <p><i>The first-year meetings were awful. Nobody knew what they were doing. The drive from the local authority wasn't the same because she was a bit confused about where she was going. (Beitris)</i></p> <p><i>As opposed to, "That was my project. I did it in my school. I did it my way. It will be no use to you". It's like, "Have it. It might be rubbish. You might hate it. You might not want it. But take it and do what you like with it" The preciousness has been taken away from things. (Beitris)</i></p> <p><i>time/ fear of failure: the time constraints are so much and the idea of getting quick results rather than accepting that for something to change its going to take 10, 15, 20 years and it's not a short term, quick fix. And that's one of the barriers I see not so much a fear of failure. about the opportunity to trial things with research behind it and then if it doesn't work then evaluate that and not to feel so pressurized. Taking time, sharing what you find, tapping into the people that are already in place in situ. Maybe not having a feeling of being pressurized. Allowing it to be a slower process. It takes time. (Alasdair)</i></p> <p><i>Entrenched ideas/ Standardized testing.....There's also a danger of doing these sorts of things that people becoming jealous. Why are they doing that? And why is it above them?, some people hold views and even if there's evidence they</i></p>
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			<p>won't change because their views become entrenched. standardized testing and it's a big barrier because teachers then become afraid. They think Well I just need to get through the curriculum because if I just get through the curriculum then that means I've done my job and if the children don't learn than it's not my fault because I did the curriculum. I think that's a big barrier to how we can do things..... Even if the children have gone down a little bit it's not necessarily to say the thing failed. It's to look at their individual confidence, their individual knowledge and we probably don't capture that very well in education. We look at raw data rather than individual experiences and to me that runs counter to the curriculum that we're meant to be creating because it's meant to be about the individual learner. And yet people say that's how the world is, they need these tests, at the end of the day they're going to be tested, but when you move into a profession you're not tested in the same way. When you become a plumber, an electrician you work or even as a teacher we're not graded all the way through so maybe it isn't fit for the purposes we're trying to do. So, I find that's one of the big barriers. The pressure that you feel under for the testing and I think that will become more of a national issue as well with the idea that that will close the attainment gap. (Alasdair)</p> <p>networking doesn't just happen by chance. People have competing priorities so you have to keep ensuring that there's a focus, but where there's been success people see the value and want to continue. (Magaidh)</p> <p>It was awful in the beginning.... It had to be done. That messy bit had to be done. (teacher 9 partnership B)</p>
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			<p><i>so that's a challenge. Dominate people. And also, we had changes in leadership in one or two of the establishments and that resulted in one of the projects (Dorcas)</i></p> <p><i>the buy-in from colleagues strategically wasn't as high because that then meant you had to invest time in engaging with schools directly and there wasn't the same commitment to that. So that's why there's more connections there because one person committed more than other..... Yes, there would have been more schools would have benefited which would have brought a richer pool of people because that's what's happened here.... o less of their establishments had the opportunity, but also, we didn't have the same number of schools to partners with..... The challenge I faced was my liaison with my colleague and the equity in terms of workload and that was a challenge, but through our commitment to this and wanting to do our very best for our schools and for our young people we put that aside..... it's very interesting to see where there's a dominate person, but as time has gone on the relationships are such that people are learning together. (Dorcas)</i></p> <p><i>“not succeeding and that was also to do with my capacity in terms of time to then be directly involved in it which I couldn't because I just didn't have the capacity because my job changed and therefore I couldn't directly have a hands-on. I think it's crucial that in forming groups there are people who are lead facilitators for that and that that's not left to happen by chance. There needs to be someone that's not part of the collaborative group who's facilitating it, particularly at the outset because you can have individuals who are really dominant and think their school's the best and what they're doing is the best and there's maybe other people sitting there with things that are as equally as good but maybe not as able to articulate it or as confident so you might get someone who's dominant enforcing where the group and the inquiry goes. (Magaidh)</i></p>
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2	Changed power structures	<p><i>“I think it’s quite good because it’s like us teaching the other ones. If they don’t understand a problem we can help them understand it.” (Boy, School C) “It’s a lot more fun because you’re being the teacher and it’s like when you’re talking about it or showing it if you’ve made a mistake you find it out when you’re drawing it out or showing it because if you add something when you’re doing it by yourself you get the wrong answer, but when you’re showing everyone else you might realize you got it wrong or your classmates might tell you got it wrong.” (girl, School C - note this girl has mentioned that one of the benefits of being in a position of leadership is having people help you recognize your mistakes!! - how many of us see this as a benefit of leadership?)</i></p>	<p><i>The set-up of the project was very good in terms of giving leadership opportunities and giving a sense of ownership. Everyone was seen as equals which I’ve never experienced that before. I was working with head teachers and QIOs and your opinion was just as valued as theirs which was nice. That element of it was really good and being given an opportunity to say this is something that we need to fix. We’re all having trouble with this. Can we fix it together? The honesty from the good relationships we ended up having with each other. The honesty enabled to say that didn’t work for me. I don’t know how to do that. I’m not confident with this. Knowing it wasn’t a competition between teachers. You were all in it for the same reason. You had the same goal. That was really nice. (Caitriona) We identified our key players in each school. And they met along with the head teachers to plan everything and they cascaded it down to the rest of the staff. So, they were the kind of forefront to get the ball rolling. (Magaidh)</i></p> <p><i>I think the most empowering thing was handing that leadership over to the teachers and actually letting them take the project forward and to develop their leadership skills in working across two school. (Deirdre)</i></p> <p><i>..... this way of doing children’s mathematics that starts to close your inequity gap and start to get a rich understanding of number. It’s not teacher led. I think those were the key points for me..... Japan and lesson study very much teacher led, very much about inquiry, knowledge and building on that knowledge. (Alasdair)</i></p> <p><i>You have to give your staff an opportunity to have time, but also value them as professionals and that was for me so crucial to this that we respected them and valued them as professionals. So, we gave them time, but we made the head teachers an equal part of the group, but we didn’t make the heads as a steering</i></p>
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			<p>group. It takes someone to keep pushing it. You've got to get that. (Dorcas)</p> <p>Initially I think the head teachers were kind of steering the group, but kind of passed it over to us to take the lead.... It was good for me as well. It was a good learning experience Taking on a more leadership role. (Moire)</p> <p>giving them a clear focus and ensuring that the teachers had ownership. That was crucial and still is. (Magaidh)</p> <p>they cascaded it down to the rest of the staff. So, they were the kind of forefront to get the ball rolling. And I think the essence about partnership is about giving as well as taking. Knowing when to support and knowing when to lead. Knowing when to support alongside and knowing when to support from behind. (Magaidh)</p> <p>I just quite like the idea that the children that are leading the learning and it's not up to the teacher to learn how to teach it and especially with the Reciprocal Reading stuff the kids lead it. So, you can go in and watch the children and the training stuff tends to be them going in and watching the kids and the kids are explaining it and what's been quite heartening.... That's great because that is the point of Reciprocal Reading it's not teacher-led it's very much pupil-led. (Una)</p>
3	evidence of increased attainment/progress	<p>"I'm going to miss this maths project when I go to high school. This has had an impact on my learning in maths. I think that it's really helpful School C) "I find it a lot easier because instead of having one set method to do it you have a variation: you could use your own method; you could use a method someone else has shown you. "School C) "Before I did this [approach] if people asked me how I got an answer I</p>	<p>So yes, there was lots of evidence there, but the things to me the things that meant the most to me were things that you can't measure like the things children would say and watching their confidence and a change in their attitude that sort of thing. The fact that they were looking forward to maths. That sort of things. Things that you can't measure on a chart or whatever. "Word problems. Yes!" And a particular child wanting to show what they had done even though they knew it was wrong because they wanted help or they knew that they'd done so much of a word problem –they knew that they had been right up until</p>

	<p><i>didn't know. But since I've been doing it with this I can go back to the problem, look at the way I did it, the method, and I can tell them."</i> School C) "... I was frustrated before, but now it's easier." (Boy, School C) "I find it easier as well because you don't need to do it one way. You can draw or try that." (Boy, School C) "I like it. It's easier for me now because [the teacher] said you can use different variations and you can use different ones to back up your first answer" (Boy, School C) "Before I would always just think about it and struggle and get frustrated, but now I find it much easier..." (girl, School C) "In P5 math was the subject I was most frustrated with, but over the [2] years, because this has been introduced, it has helped me more and it has worked and now it's my favorite subject" (girl, School C) "You look back in your jotter. If you look back at a question that is now easy, but it was so hard back then" (girl, School T) "I couldn't really read books when I was in P5, but now I can. I read them all the time now" (girl, School Reading) "When we didn't use Reciprocal Reading it wasn't as easy as it is now to find out words and stuff" (boy, School Reading A) "We get more questions now because we can understand what we read" (girl, school reading A) "Now we know more words and we can read faster now." (Girl School reading A) "Until they did introduce Reciprocal Reading we started to read novels. It can help you read a lot faster.... Now I love reading" (boy, School Reading</p>	<p><i>a certain point but didn't then know where to go. They knew they'd done the wrong thing. A little girl that is particularly shy. Not shy, but shy in maths, not confident in her ability in maths. And then this group of children in my class where there was primary 7s and primary 5s. She stood up, this primary 5 girls in front of all the primary 7s, "You know I've got this wrong after this part, but this is what I've done. Not sure where to go next." That sort of thing. Just that kind of confidence That ability to articulate as well. She had the processes that she was going through to get to this part. (Isla)</i></p>
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		A) "It's [Reciprocal Reading] helped me figure out the main points" (girl, school reading A)	
3	reasons stated for increased attainment/progress	<p>"Our explanations help people understand it [our work] because if they don't understand the picture you've drawn out they'll understand it more with the explanation" (girl, School C) "I like giving presentations because if I make a mistake and I don't see it other people can tell me" (boy, School C) [girl from reading school A talked about being able to understand what she was reading and also about enjoying predicting what might happen next]</p>	<p>suppose other things that could have been difficult were things like pulling the data together, making comparisons, having to take into account that you still, even though we were working in partnership and we are all similar schools, you have your own specific circumstance in your own establishment so you have to take that into account too (Claire)</p> <p>people weren't afraid then to say, "You know I cannae do that lesson. It didn't work in my class. So why did it work in your class and not mine?" So, it was the enrichment of the dialogue was really, really purposeful and helped to kind of move things along but again it's like everything it's all about good relationships isn't it.Wer're looking at numeracy and it's really interesting the dialogue that's happening. It's real honesty. "That just did not work in my class." And their now inviting colleagues to come in and video them. "I need to see why. Why is that child not engaging? Can you come in and I really just want you to focus on one child for me because I don't think as soon as I stop speaking to him direct he's engaging. But I want to know why. I want to know what happens. So, it's quite interesting. And I think it's the hook of research. (Magaidh)</p> <p>Sharing ideas and good resources because that's a time-consuming thing (Moire); sharing of resources (Gillian)</p>
	new approaches	<p>"I think it is pretty different than what we would do normally because you're not restricted to methods that you use.... Having variations of methods that you can use really helps." (, School C) "I find it easier as well because you don't need to do it one way. You can draw or try that." (Boy, School C)</p>	<p>I don't know if all the projects could say the same, but ours has completely changed the way I think about teaching altogether just because of the CGI method and absolutely changed the way that I teach maths and my whole beliefs about the way that maths is taught and going on to unit to find out more about that is something that I just didn't think I would be interested in doing. So, it's good. It's really motivated me and inspired me in my teaching which has been good.</p>

			<i>(Caitriona)</i>
	<i>Value of relationships</i>	<i>“I think we can help others. See if the majority of people are stuck on the same problem anyone who has an idea or an answer- they can share their method. It can help in two ways. It can help them solve the problem and it can also help others find out about their method.” (School C)</i>	<p><i>TRUST: Because you weren't scared that somebody was going to come along and say. Well, if it didn't work it's your fault. We were actually just sharing as colleagues, as friends as well. And have an honest and frank conversation which was then fed back (Moire)</i></p> <p><i>But I think the conversations at the beginning - it was really about getting to know each other and about an establishing relationship. You can't really build something sustainable unless you have that trust, you have that experience. And that's why it was really important to meet as often as we could even (Claire)</i></p> <p><i>I think there was a lot of getting to know you and building up trust and building up confidence so that the conversations became deeper as we went along because we were establishing this effective communication and positive relationship between us all whether it be face to face, on the phone, email. We could really have collaborated very, very well. It was developmental. It's something that takes <u>time</u>. And as it goes along it becomes stronger and there are more opportunities to communicate and to talk about the innovative methods that we were going to use. (Claire)</i></p> <p><i>I think that comes with trusting the people that you've given that opportunity to. You couldn't do that with everyone. So, there might be some people you'd give that role to but you'd need to be there more. What did your partnership do best?</i></p> <p><i>I think shared ideas with each other and developed a really positive working relationship with each other and trusted each other. (Horvath)</i></p> <p><i>I like the fact that they were given time to chat. Opportunity to build relationship as well. (Una)</i></p>

	evidence of relational learning	<p>“And you can learn when people show their methods.” (boy, School C) “I find it a lot easier because instead of having one set method to do it you have a variation: you could use your own method; you could use a method someone else has shown you.” (School C) “Sometimes if you’re in front of an audience you realize if you did something wrong. You realize quicker and then other people know the method. Like sometimes the method doesn’t work so other know that that method doesn’t work.” (girl, School C)</p>	<p>It was the time we had together was really import. We got the time to research and go and try it and discuss it. Rather than just being given it and let go. Which is maybe why it’s not just those ones feeding into the 6. What you can see is there’s the links. It’s not just one person standing delivering and then everyone goes and tries it and that’s it. As you said it’s that coming back and forward with communication. (Mhairi)</p>
	increased attainment: more confident	<p>more confident...” because we’re put into groups and if we need help we can ask one of the other people in our group” (girl, School Reading) “It [reciprocal reading] really boosts your confidence” (boy School reading A)</p>	<p>Confidence: They started off saying I can’t do that, but then they saw they could do when they tried different ways from the formal ways they were used to. Working out calculations they would like to work it out with cubes or whatever. Using practical materials and it helped them and they could have a go at doing it. (teacher, Cluain Partnership)</p> <p>And sitting and talking through with them the downfalls. I think that is something we often ignore. We focus on right we’re raising attainment. We’re focusing on reading. Here’s all the good things that are going to come from this. And we don’t talk about right Why might this not work? Who might this not apply to? What demographic here are we missing (Caitlin)</p>
	increased attainment: motivation		<p>With the motivation, we found it increased their ability to do the maths (Mhairi)</p>
	sustainability		<p>I think it was very successful and I think the measure of that is that we want to continue working in partnership with --- or with whoever. We can see the value of it. If there were opportunities to continue with that we wouldn’t have that initial apprehension anymore because we can see that things work and also in terms of all the class teachers engaging in professional research and action research and looking at tackling inequity. We have the confidence to look at it. I think it was overall highly successful.</p>

			(Claire)
	<i>increased attainment: time</i>		<p><i>Also picking the right staff for it. We just took the time, a whole day or a whole morning to get started. And involving them from the very beginning in looking at the data. So, it wasn't as if we had gone away and planned it and thought here's what we should do we didn't actually have a plan. We just had the research questions, the background to it The other thing is starting small and having your timescale over something like 2 years or 3 years. In the past we write our school improvement plan and we expect to achieve your targets within a year and then move on. So that was one of the biggest attractions of this project was that we were going to be tracking a group of children over 2 years or 18 months and then you can see a huge difference. We've done projects before about raising attainment for the lowest 20% and you've got 6 months to do it. If we could do that we'd be millionaires! So, I think starting small and having a long period of time to work through a project with the same theme running and not expecting results so quickly.</i> (Morvyth)</p> <p><i>But time to talk is precious. One of the repeated messages from everybody is you need time for relationships to develop. How often do you get the opportunity to sit and talk about teaching in an undisturbed, focused manner that doesn't have a huge agenda by a manager? It's not often...It does depend on building relationships. And you do have to invest time in that. You can't just suddenly go right this is the wee innovation team. Off you go. Get on with it. You do have to find time to let people get to know each other and be willing to work with each other and especially it it's somebody from another school or another local authority that you don't know at all.</i> (head teacher 21 partnership B)</p> <p><i>Teacher, 9 partnership B</i></p>

			<p><i>Even just sitting chatting about the things you do in your class. About your school. Just informal chat.</i></p> <p><i>People want quick results. The danger is you just keep on doing lots of little things and you don't invest. There's really not the awareness of policy-makers that this is short term.</i></p> <p><i>If you want to make a difference it's not going to happen in your first, 2nd 3rd 4th or maybe even 5th year. You're waiting until 10-15 years down the line and I think the braver ... I was new into the school and normally I'm very conscious that if you come into a new place you have to take time to understand what people are up to and what they're doing... There's also a danger of doing these sorts of things that people becoming jealous. ...And I think it's important that some people don't see it as important and they have different beliefs about how mathematics should be taught and we have to allow them to hold those beliefs. ...some people hold views and even if there's evidence they won't change because their views become entrenched. (PF teacher partnership A) (PF teacher partnership A)</i></p> <p><i>What we've decided as a group is that we can't measure this over one year so we've already agreed that we'd like to revisit it. ----- does the GL every two years...We will all get together again to re-measure this year...to see if longer term we improve. (Magaidh)</i></p> <p><i>Sometimes In different groups I've been in the past some people are very dominant or they just want to say their piece and that's it – they're not listening. It shuts down things. I think we had the time to develop our relationships and to support one another and sometimes that doesn't happen in schools. Sometimes you're trying to move things too quickly. I think we had enough time to share and look and learn from what we did wrong and change things in the future. (Alasdair)</i></p> <p><i>Let them have a time to reflect and give them time to think how can we take that forward. Make time for them to take it</i></p>
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			<p><i>forward. Where things fall down in education is we don't give people time to put into practice, to trial because people have a teaching commitment and we need to make sure we commit to giving teachers time to learn together. In terms of the process for collaboration you need to create the conditions for that which is where there are good relationships and also give time to people. Dead simple.</i></p> <p><i>(Dorcas)</i></p>
	<p><i>increased attainment: size</i></p>		<p><i>One bit of advice would be to keep it really small to begin with and although that's frustrating and that was one of the frustrations at the beginning. "Goodness we're only doing this with 2 or 3 teachers and a small group of pupils (8-10 pupils in each school) Ours started out with 2 or 3 teachers and a group of 8 or 10 pupils and now we've got the whole school and the nursery and the high school has had some involvement."</i></p> <p><i>(Morvyth)</i></p> <p><i>There were head teachers there that didn't know about the project so we were sharing things with them and then rolling that out to 60 members of staff within three schools. After our project has kind of snowballed from there. (Caitriona)</i></p> <p><i>I think the first thing is start small and I think that in education you think it has to be with everybody and it has to be implemented right away and I think one of the key strengths with ours is that there was a lot of time spent planning so there was time committed to looking at all the data, gathering data, looking at that, analyzing the data and really being sure about the group of children that we wanted to target and knowing that it was ok for it be one group within one class. It didn't have to be the whole class. It didn't have to be the whole school. It was fine to start small. And a commitment to time to allow teachers time to meet to have that prof dialogue and to have the time to do their research ()</i></p>

			<p><i>It's kind of paring it all back a wee bit and diluting it a little bit to make it actually happen. (Beitris)</i></p>
	<p><i>attainment evidence - why the teachers felt traditional assessment was inadequate</i></p>		<p><i>I don't always think that tests give you an actually true reflection. We also proved that our capacity of our teachers has increased because their questionnaires before and their questionnaires afterwards were much more positive, much more confident. For me that's more important than one set of children gaining results. This for me will have a longer term. (Magaidh)</i></p> <p><i>In this local authority, we do standardized testing and it's a big barrier because teachers then become afraid. They think Well I just need to get through the curriculum because if I just get through the curriculum then that means I've done my job and if the children don't learn than it's not my fault because I did the curriculum. I think that's a big barrier to how we can do things We look at raw data rather than individual experiences and to me that runs counter to the curriculum that we're meant to be creating because it's meant to be about the individual learner....so I find that's one of the big barriers. The pressure that you feel under for the testing</i></p> <p><i>I learned about national testing a year and a half ago and I thought you're having a laugh! You just got us doing all this... and now you're just going to test them!" (Una)</i></p> <p><i>So, I find that's one of the big barriers. The pressure that you feel under for the testing and I think that will become more of a national issue as well with the idea that that will close the attainment gap. (Alasdair)</i></p> <p><i>Whereas your impact in raising attainment there might be no impact, I wouldn't throw it out of the water because you might look at your qualitative data and realize you've raised confidence in teachers and consequently the raising attainment</i></p>

			<p><i>impact might come in three years' time. But you've got to. There was no impact with this the first 3 or 4,5,6,7 months, there was no impact, there was just actually a bit of confusion. You've got to measure all of the impact. You can't raise attainment in 10 months. (Beitris)</i></p>
	<p><i>between authority/inter-authority (support, competitiveness, jealousy, differences, seminaries, overcome by ...)</i></p>		<p><i>"And that idea now that you can go and ask another school. And the expectation if you say to another school, "Did you do Reciprocal Reading and have you got any stuff for that?" The school will say, "Yes, here it is". As opposed to, "That was my project. I did it in my school. I did it my way. It will be no use to you". It's like, "Have it. It might be rubbish. You might hate it. You might not want it. But take it and do what you like with it" The preciousness has been taken away from things. It has ballooned. (Beitris)</i></p> <p><i>"Knowing it wasn't a competition between teachers. You were all in it for the same reason. You had the same goal. That was really nice. "(Isla)</i></p> <p><i>"We did get a feeling through talking to some of our schools that they felt more supported from the center than their -- counterparts" "Absolutely crazy everybody doing their own on a shared campus of a denominational and non-denominational secondary. As far as I know that's the only cross-learning community we have. (Callum)</i></p> <p><i>Everybody wants to be the best of the best and having two authorities that were willing to work together, share practice for the benefit of the children... without any of the, who's higher on the league table? And things like that was really, really beneficial for the partnership.... If you're asking people within your own authority you're not going to get much more to go on than what you already have. So, having another authority was interesting because they have things that we don't have. They have policies that we don't use. They have things that their</i></p>

			<p>council has given them that our council hasn't given us... And it was good to have two authorities from similar areas of deprivation where resources weren't a plenty.....You can't replicate what some authorities are doing when they've got more money than us.</p> <p>" (Moire)</p>
	<p>narrow assessment (freedom? conversion of resources in capabilities?)</p>		<p>"I don't always think that tests give you an actually true reflection.... We also proved that our capacity of our teachers has increased because their questionnaires before and their questionnaires afterwards were much more positive, much more confident. For me that's more important than one set of children gaining results. This for me will have a longer term. ... Which is a major mind shift for me that I don't need to be tracking every single child's attainment in the school to prove that what we're doing actually makes a difference. "(N6 head B)</p> <p>"in terms of raising attainment and it depends on what your definition is in terms of attainment and who the key forces are that are driving that agenda so in terms of inequity I am 100% assured it's due to inequity in terms of the opportunities families have had and the quality of experience the child has primarily in their home environment "(Dorcias)</p> <p>I think a lot of our data, you know, was observations and notes that we took from what we could see the children doing on a day-to-day basis and things you can't really measure so a lot of qualitative data but the hard data from the pre- and post-assessment definitely showed an increase in attainment anyway. So yes, there was lots of evidence there, but the things to me the things that meant the most to me were things that you can't measure like the things children would say and watching their confidence and a change in their attitude that sort of thing. The fact that they were looking forward to maths. That sort of things. Things that you can't measure... (N10, part B)</p>
	<p>bigger picture outside of the immediately visible SNA</p>		<p>"Working with educational psychologist to signpost us to key tools such as Myself as A Learner questionnaire that we used</p>

			<p><i>and also the quality improvement manager who did a lot of the data analysis for us and supported teachers and then going on and doing that data analysis themselves. We also had the QIO responsible for numeracy and mathematics give us support. He signposted different research and different approaches that we could have used and then the research team at Glasgow University. I think all of those key professionals helped to guide us in the direction we went. I think the most empowering thing was handing that leadership over to the teachers and actually letting them take the project forward and to develop their leadership skills in working across two school.</i></p> <p><i>“(Head 2 Part A)</i></p> <p><i>“I wasn’t given any particular support within the project. “(N6 head B)</i></p> <p><i>“In terms of our local authority I didn’t personally feel it [support]” (Caitlin) -----</i></p> <p><i>“Before your involvement in SIPP did you have many opportunities for contact outwith the authority? No. none. None a al..now...other schools... non-denominational schools... Facebook page ...People put up examples of things they have done and talk about the methods” (teacher 10, part B).</i></p> <p><i>“I was always very supported by my managers within the school to get time to communicate and time to work on the project and I was given the time it deserved. Whereas, maybe I know for a fact that the people in --- struggled to get out of the school, couldn’t get cover, maybe if they were coming to a meeting there were two girls in ---. Maybe one of them could come, but it wasn’t always two of them. Their managers in the school weren’t really involved. Whereas --- our Deputy was involved in the project as well “(teacher 10, part B)</i></p>
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			<p><i>“Right from the beginning we had support from the Local Authority looking at the data and helping us with how to analyze the data and what conclusions we could draw from that and how we could use that to help to track children as well. So, we had a lot of support. And advice along the way. (Morvyth)</i></p> <p><i>“with the help of the university we were able to look a bit deeper at the distance travelled by learners which was a revelation to us because it’s really helped us to analyze data” “The approach that we used we found out about it by talking to another partnership in another authority not the authority that we were working with because we knew that we were looking for something to help with problem solving and when we went to one of the national events we were able to go around and see what everyone else was doing.(Claire)</i></p> <p><i>“I think that all comes down to being supported in your school and by your local authority. “ (teacher 10, part B)</i></p> <p><i>“we asked all the parents in for an open afternoon so that parents could see the strategies that were being used in the class “(N7 head B)</i></p> <p><i>“So, I think the biggest support came from my peers, my head teachers and then from Glasgow university” (N7 head teacher part B) — —“</i></p> <p><i>They [Local Authority officers] were at meetings, yeh. They helped with the linking with the Glasgow University and then making the links with the schools and provided CPD within the project as well.... The head teacher’s support was constant throughout the project. The local authority was more at the beginning, just when it was starting.... end psyches, officers, Glasgow uni, Ed Scot...” (Mhairi)</i></p>
	<i>collaborative inquiry</i>		<i>“And I think it’s the hook of research. That good solid research can make a difference. So, they’re interested now. My staff,</i>

			<p><i>they're more solution orientated rather than just identifying the problems. It's very easy, they'll come along for a meeting to talk about their class and about their attainment "Ah well, they're just not achieving". Whereas now, it's "They're not achieving and this is why I think". And more importantly, "This is what I'm going to do about it." And not sit back waiting for me to give them the answers. "Ah well I think you should try" It's about that confidence I see in my staff as well. "(N7 head part B)</i></p> <p><i>— — — "collating and interpreting data... As teachers, we're not that skilled in doing things like that...lack of skill and lack of time" (head teacher 21, part B)</i></p> <p><i>"the issue of pre-and post assessment to measure impact was a relatively new thing to our teachers and then reporting on it"</i> <i>"The collaborative approach to planning, to delivery and assessment and then even the lessons learned from SIPP we're now able to use people that have gone through the SIPP project to further support the work that we're doing not just in rolling out SIPP partnerships within the authority but also deeper down in the moderation activities and supporting teachers through that process and the professional dialogue and asking more targeted questions to the learning of the children...and one thing that really helped was the fact that I was able to say You know this works and we know it works because we've got data to show it works". Nobody could argue against it because we had the data to back it up. (Callum)</i></p> <p><i>"that kind of approach meant that we had two sets of data really and as well as doing assessments we also interviewed the children and asked them how they felt about the intervention and if things had changed for them so there were lots of opportunities to really gain so much information so that was advantageous for us." Claire)</i></p>
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		<p><i>Collaborative inquiry or Lesson Study??: “I tell the children mistakes are something to learn from, but when I make one, I feel as though I’m not very good at my job, so if you were to come in and watch me, give me constructive critique and I’ll learn from it</i></p> <p><i>And I think that’s what this project gave the people involved. You no longer had that fear of I’m either good or I’m not good. You had the building blocks. This was good. I would have done this differently. You didn’t get defensive. You were actually interested so, “What did you see that I didn’t see?” Right ok I’m going to try that then. I never realized. You lost that sensitivity towards your practice. Don’t get me wrong I don’t want you to open the doors and let everybody come in and watch me teach.</i></p> <p><i>There was a constructive partnership it wasn’t the competitive someone from another authority came in and said, “Oh she pants. You started to think of these people as being almost your scaffolder. They would support you and tell you what was good, but they’d also provide you with steps that you need to take, that maybe someone in house might want to say to you because you’ve got a social aspect there. So, I think that really good.”</i> (Caitlin)</p>
	<p>brokering</p>	<p><i>How do you work with other people, being able to support them, challenge them? You need to be in a position where you’ve got a good grounding in the relationship first of all. I think it’s very much about the early stages and understanding you have to give people time to build these relationships to start off with.”</i> (Callum)</p> <p><i>“You can’t really build something sustainable unless you have that trust, you have that experience. And that’s why it was really important to meet as often as we could even give the fact that that is not always possible for everyone to be at every meeting, but the more you try the more you’ll accomplish so the conversations certainly changed. I think there was a lot of getting to know you and building up trust and building up</i></p>

			<p><i>confidence so that the conversations became deeper as we went along because we were establishing this effective communication and positive relationship between us all whether it be face to face, on the phone, email.” (Claire)</i></p> <p><i>“There is a Facebook page. On this Facebook page, it’s all teachers. It’s called Cognitively Guided Instruction in Scotland. So, we’re now on that. It’s just basically like a forum. People put up examples of things they have done and talk about the methods. “(teacher 10, part B)</i></p> <p><i>barrier overcome: “OurCloud.Buzz. It’s like Glow. It means they can email the same email thing, and they can access each other’s, you know sharing documents and sharing resources it can be done very easily. That has been done.” (head teacher 21, part B)</i></p> <p><i>“we text each other as well. Not another email! Text. We’ve actually managed now to get - we’ve been given permission to get onto ---’s Cloud.” (N7 head B) — —</i></p> <p><i>“How do you work with other people, being able to support them, challenge them? You need to be in a position where you’ve got a good grounding in the relationship first of all. I think it’s very much about the early stages and understanding you have to give people time to build these relationships to start off with.” (Callum)</i></p> <p><i>“You can’t really build something sustainable unless you have that trust, you have that experience. And that’s why it was really important to meet as often as we could even give the fact that that is not always possible for everyone to be at every meeting, but the more you try the more you’ll accomplish so the conversations certainly changed. I think there was a lot of getting to know you and building up trust and building up confidence so that the conversations became deeper as we went</i></p>
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		<p><i>along because we were establishing this effective communication and positive relationship between us all whether it be face to face, on the phone, email.” Claire)</i></p>
	<p><i>other</i></p>	<p><i>We had started it [Reciprocal Reading] but our angle on it was more about personalization and choice “(N6 part B head)</i></p> <p><i>BARRIER: “where we could have had clear roles in terms of expertise and skills and we could have utilized that to help us then maybe take this further. I’m trying to be gracious.: (Dorcas) — — —</i></p> <p><i>“Common purpose mandated, “in terms of the individual projects that emerged they were aligned with that overarching objective that we were very rigorous about ensuring it was adhered to.... I’m now thinking that may now need to come back in because we’re not framing this within How have we tackled inequity? maybe as strongly enough. What we’re saying is How we’ve raised attainment, but maybe not necessarily explicit enough in tackling inequity.” (Dorcas)</i></p> <p><i>— “I felt we all had a communal goal and a communal interest and a shared vision and that really brought us all closer together. (Claire)</i></p> <p><i>vulnerability in discussions] “And sitting and talking through with them the downfalls. I think that is something we often ignore. We focus on right we’re raising attainment. We’re focusing on reading. Here’s all the good things that are going to come from this. And we don’t talk about right Why might this not work? Who might this not apply to? What demographic here are we missing?. Without the fear of Well No, that’s negative because you had people in the same boat as you and you weren’t scared to say, “That didn’t work” Because you weren’t scared that somebody was going to come along and say. Well, if it didn’t work it’s your fault. We were actually just sharing as colleagues, as friends as well.” (Caitlin)</i></p>

			<p>— [pupils teaching teachers] — “one of the ladies came out to me and she watched the introduction, but see after that I sat her with a group of the children so it was no longer about me. It was about, what have they got from this lesson? And she sat back and she watched the conversation between them and she said they taught me how to do this. They taught me how to do your lesson. And they talked me through what they liked about it. And it was such a rich conversation.” (Caitlin)</p> <p>“the impact of it has actually gone wider because our initial focus group were boys and children from minority backgrounds however what we found very similar with a lot of things we find are it helps all children and not just those. It’s the usual story, not just those from that background and not just boys the group that we choice we did had boys and we did have learners from a minority background however the girls in the group who are quite middle class who really really struggled with maths have had as much of an impact on them. Which is kind of what you’d expect. It actually. The focus has still been to track those boys who are minority learners but it’s had an impact across the whole group because we’ve used the same strategies across the whole group of pupils and we have found it’s had a huge impact on their learning and their confidence in mathematics” (Morvyth)</p> <p>“One bit of advice would be to keep it really small to begin with and although that’s frustrating and that was one of the frustrations at the beginning. “Goodness we’re only doing this with 2 or 3 teachers and a small group of pupils (8-10 pupils in each school).” But you then see that if it works and we change it and then we can widen it out and widen it out” (Morvyth)</p> <p>“It will take about 4 years to completely go through because they need skilled and trained. That’s the way I work. I know some schools do it once and then everybody gets it, but I just</p>
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			<p><i>quite like the idea that the children that are leading the learning.... The impact might only be for one teacher at that time and then it grows.... I like the fact that they were given time to chat. Opportunity to build relationship as well.... I can't imagine our relationship fading away.... I think the poverty is almost irrelevant because it's raising attainment for all. And yes, we do want to close the gap, but the only way to actually raise people up or pull people down. And if you raise them up, you have to raise them up as well because that's good teaching." (N6 head B)</i></p> <p><i>"quite quickly it became apparent that it would be unfair to allow the girls who have English as their first language not to participate. So, it seemed to be fair to make sure that everyone was able to participate to raise attainment and we talk about closing the gap but also to allow them to feel more confident in their maths. And then to start to link in their parents..... I think we had the time to develop our relationships and to support one another and sometimes that doesn't happen in schools. Sometimes you're trying to move things too quickly. I think we had enough time to share and look and learn from what we did wrong and change things in the future.... So, we tried to do it slowly and gently and hopefully supportively and allowing people not to agree with it as well. And I think it's important that some people don't see it as important and they have different beliefs about how mathematics should be taught and we have to allow them to hold those beliefs. It will only be through seeing other people and seeing how the children learn that hopefully eventually they'll change, but they may never because some people hold views and even if there's evidence they won't change because their views become entrenched." (Alasdair)</i></p> <p><i>"It thinks the approach we used actually benefited all children. (head 2-part A)</i></p>
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			<p><i>“Whereas when you’re with strangers ... the teachers do become more honest. It’s funny. They’re almost hiding behind Reciprocal Reading, but it’s not. From that we’ve launched working parties within my own school. We’re looking at numeracy and it’s really interesting the dialogue that’s happening. It’s real honesty.” (N 7 head teacher, part B)</i></p> <p><i>“it’s like everything it’s all about good relationships, isn’t it?” (N7 head teacher part B) “One of the repeated messages from everybody is you need time for relationships to develop. “head teacher 21, part B) “I had to say, “I’m really not happy”. It turned out that another 8-people said, “I agree with you”. “(teacher 9, Part B)</i></p> <p><i>For the whole thing to work the relationships had to be intact. And then that made you feel even more like classroom monitoring or putting your hand up at a meeting and saying I don’t know. And people are only likely to be honest when that relationship is there. They don’t feel judged.” (teacher 12, part B)</i></p> <p><i>“It definitely evolved from initially being specifically about gender and boys to then coming to be about motivation.” (Mhairi) [communal goal and started small] – “How is it beneficial to be linked with a school outside of the cluster? Because of the context maybe. Because you come together for a shared reason. When you’re at a cluster that’s assigned to you because of location you do a lot together and you do work collaboratively a lot but the fact that this was for a shared reason this was different. Both schools had a shared interest in terms of developing the maths. That’s now spread out to the clusters as well. But in small steps. The huge thing, the fact that it started in such a small way and it was slowly built up rather than it being a new thing that everybody has to go away and try and it must be in your classrooms and it has to be embedded. It’s not been like that at all “(Mhairi “I felt we all</i></p>
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			<p>had a communal goal and a communal interest and a shared vision and that really brought us all closer together. (Claire)— [vulnerability in discussions] “And sitting and talking through with them the downfalls. I think that is something we often ignore. We focus on right we’re raising attainment. We’re focusing on reading. Here’s all the good things that are going to come from this. And we don’t talk about right Why might this not work? Who might this not apply to? What demographic here are we missing?... Without the fear of Well No, that’s negative because you had people in the same boat as you and you weren’t scared to say, “That didn’t work” Because you weren’t scared that somebody was going to come along and say. Well, if it didn’t work it’s your fault. We were actually just sharing as colleagues, as friends as well.” (Caitlin) — [pupils teaching teachers] — “one of the ladies came out to me and she watched the introduction, but see after that I sat her with a group of the children so it was no longer about me. It was about, what have they got from this lesson? And she sat back and she watched the conversation between them and she said they taught me how to do this. They taught me how to do your lesson. And they talked me through what they liked about it. And it was such a rich conversation.” (Caitlin)</p>
	Research focus		<p>I think the research stuff has given us that kind of inquiry that maybe we wouldn’t have cared about before. (Magaidh)</p> <p>But I want to know why. I want to know what happens. So, it’s quite interesting. And I think it’s the hook of research. (Una)</p>
	vulnerability		<p>so, it was quite good to be able to “I don’t know what to do” And some of the kind of older members of staff here who were a wee bit apprehensive about the whole new approach What did this partnership do best? I think really just sharing practice, sharing resources, just having somebody to chat to and “Oh I’m <u>struggling</u> with this. (Moire)</p>

			<p><i>And people are only likely to be honest when that relationship is there. They don't feel judged. (teacher 12)</i></p> <p><i>Head teacher, 21</i></p> <p><i>And when people said, "I don't understand this". Suddenly other people said, "Neither do I!" (partnership B)</i></p>
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