

THE UNIVERSITY OF HULL

The needs of stakeholders in the formation of a local Children's University: An exploration through Grounded Theory of participant drivers and their underpinning features

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by

David T. Overton, M.Ed.

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Abstract

There are over ninety local Children's Universities (CUs) throughout the United Kingdom and overseas. CUs aim to recognise the learning needs of children which are met through extracurricular and out of school provision. The performance of some local CUs has been evaluated for the National Children's University on an annual basis. There has never been a detailed exploration of factors underpinning the needs of stakeholders, including children, teachers, teacher education students and Higher Education tutors, involved in the formation of a local CU. The aim of this research was to identify motives for stakeholder participation in the local CU, to discover their needs and identify issues that contributed to those needs. This qualitative study used open, unstructured individual and focus group interviews with stakeholders using a constructivist grounded theory approach. The research identified that the unique approach by this CU benefited learners at several levels of development by providing a context within which children, teachers, teacher education students and Higher Education (HE) tutors could learn in a less formal way than in standard school practice. There was informal acquisition of knowledge and skills by children, continuing professional development for teachers and modelling of effective practice to teacher education students by their tutor. Teachers described the pedagogy adopted as innovative. They considered the tutor as a trusted expert who was able to support their professional development. Tutor credibility was enhanced in the eyes of the teacher education students who valued the opportunity to observe their tutor teaching children rather than just modelling it to them. These views were upheld in comments made by other education-related professionals, by school governors and by parents. Findings have implications for the professional development of teachers. They are relevant to current moves to 'train' new teachers in schools. This approach, with more emphasis on non-formal learning, is valued by students and by teachers but the latter, in particular, value the presence of someone with expertise to moderate the process.

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List of Acronyms

AQA	Assessment and Qualification Alliance
ASE	Association for Science Education
AYS	Academy for Young Scientists
BA	Bachelor of Arts
CAQDAS	Computer Assisted Qualitative Data Analysis Software
CILS	Centre for Informal Learning and Schools
CISTL	Centre for Inquiry in Science Teaching and Learning
CPD	Continuing Professional Development
CU	Children's University
DCSF	Department for Children, Schools and Families
DES	Department of Education and Science
DfE	Department for Education
DfEE	Department for Education and Employment
HE	Higher Education
HEI	Higher Education Institution
HEFCE	Higher Education Funding Council for England
HoD	Head of Department
ILSA	Informal Learning and Science in Afterschool initiative
IMD	Index of Multiple Deprivation
INSET	In-Service Training
ITE	Initial Teacher Education
ITT	Initial Teacher Training
JPD	Joint Practice Development

LIFE	Learning in Informal and Formal Environments
LYREC	Learning and Youth Research and Evaluation Centre
NC	National Curriculum (in England)
NCSL	National College for School Leadership
NECSI	New England Complex Systems Institute
NFER	National Foundation for Educational Research
NQT	Newly Qualified Teacher
NSF	National Science Foundation
OECD	Organisation for Economic Co-operation and Development
OfSTED	Office for Standards in Education
PE	Physical Education
PEAR	Program in Education, Afterschool and Resilience
PISA	Programme for International Student Assessment
QCA	Qualifications and Curriculum Authority
QISS	Quality in Study Support
SAT	Standard Assessment Task (relating to the National Curriculum in England)
SE	School Experience
STEM	Science, Technology, Engineering and Maths
TDA	Training and Development Agency
UK	United Kingdom
USA	United States of America

Chapter 1: Introduction

1.1: Why is this topic being researched?

This topic, focusing on the needs of the participants during the formation of a local Children's University (CU), was chosen as an area to be researched because there was relatively little research into Children's Universities apart from that carried out by MacBeath et al (e.g. 2008, 2010) discussed below. This was particularly true of research that explores the nature of a more informal way of learning and one that focuses on the needs of the participants and, perhaps more importantly, the underlying principles and issues that generate those needs.

1.2: What is the significance of the topic?

The topic is of significance to the researcher because he initiated the formation of a local Children's University. It will also interest Managers of Children's Universities throughout their National network (both in the UK and abroad) and workers in Higher Education and Initial and Continuing Teacher Education.

It will be seen that the initial interest shown by superiors at the University Campus was rather non-committal and this is explored later. Nevertheless, the CU initiative will be of interest to well-informed personnel involved in addressing the Widening Participation Agenda in Higher Education Institutions.

1.2.1: Initial implications for ethical issues and researcher positionality

The researcher's positionality and need to maintain impartiality had a major bearing on the consideration and pursuance of ethical issues nested in the research. In particular, it related to aspects such as his project management (and a desire to sustain a successful local Children's University); his potentially powerful hierarchical relationship with his participating teacher education students (and possible issues around their participation or non-participation that may impact on their progress during their degree course in terms of favouritism or preferential treatment); and his professional relationship with participating schools including possible underlying feelings such as an onus on schools to take part in local Children's University activity as recompense for receiving undergraduates on placement as part of their course, The position of the researcher is discussed in Section 4.1.

In addition to the above the researcher was faced with a dilemma. As a former teacher, the researcher could be said to have 'insider knowledge' of the needs of some teachers and pupils. This raised some initial concerns about the integrity of data collected and the outcomes of its analysis. Consequently due consideration had to be paid to anticipation of ethical issues here and also to the selection of a research methodology that could ensure that such features were eliminated or at least minimised. Again, this is considered in Section 4.1 and in addition in Section 2.2.

1.3: What is the context of the research?

It seems prudent to explain what a Children's University actually is. The first Children's University (CU) was set up in Birmingham, England in 1993. It was one of a string of initiatives set up around that time by Tim Brighouse, then Chief Education Officer of Birmingham City Council. The initiatives sought to address several problems but one central issue was the gap between educational opportunity offered to learners in the highest and lowest attaining schools. This was particularly apparent in many large cities in the UK. Successive Programme for International Student Assessment (PISA) reports emanating from the OECD (OECD, 2006-09) illustrate the persistent nature of this problem in virtually every country where schools exist. The policy response in many countries has been to put more pressure on schools and on teachers, an intensification process which has proved counter-productive to the learning and growth of many children and young people (Tymms, 2004, Galton and MacBeath, 2008).

The notion of a CU sought to address the gap between the highest and lowest attaining schools and the highest and lowest attaining pupils. The Birmingham CU inspired the birth of a CU in several cities around the UK, principally in England. Initial funding emanated from a variety of sources. In Hull, for example, the main source of funding was Government 'Single Regeneration Budget' funding. This funding source was intended to support communities within areas of social or educational deprivation. Sources of funding dwindled and the apparent successes of the CU began to fade in line with this and many ceased to function effectively. Some continued to operate however. The Hull CU had recruited people from industry to act as mentors to the children. The

Hull CU developed this aspect and was successful in acquiring some funding from local industry.

In recent years the CU initiative has been re-launched with funding secured from the Department for Children, Schools and Families (DCFS) and the Sutton Trust. A principal feature is that it focuses on children in schools who are high on the Index of Multiple Deprivation (Department for Communities and Local Government, 2012). This is based on various issues including social, environmental and financial aspects. The CU is now a growing national movement (see www.childrensuniversity.co.uk for mission statement and background information) with 90 active centres and 10 in embryonic stage. Ten further centres were identified for development in 2009-10. Since the rebirth 25,849 children aged 7-14 have benefited from over 250,000 hours of input in this first year (MacBeath and Waterhouse, 2008). MacBeath and Waterhouse published a further report in January 2010. It contains case studies of local Children's Universities and examines the learning profiles of some participating children.

A CU seeks to raise the attainment of learners by providing them with learning in contexts often not provided during a 'normal' school day. In other words, the main aim is for learning to take place outside of school hours, i.e. it is extracurricular. The programme of learning delivered to pupils is known as a module. A module comprises, generally, four taught sessions each of ninety minutes duration, i.e. one session each week for 4 weeks. One strength of the learning 'modules' is the supportive mentoring of pupils by individuals drawn from the local community. These mentors come from a variety of backgrounds including parents, governors, business people, school support staff, teachers and college students. The mentors undergo training by the CU manager so that they are well versed in their role. Contexts for modules can be quite diverse and include, for example, a focus on democracy including a visit to the Houses of Parliament in London, a focus on sport or healthy lifestyle linked to local sporting teams and visits to examine the operation of hotels and businesses.

1.4: The background of the researcher

Earlier in his career, the author was an active participant, as a teacher 'tutor' in the CU initiative in the North of England in the 1990s and tried to uphold the

intentions of the CU by delivering innovative 'modules' within the school setting but linked to, and involving, the wider community. The emphasis was on raising children's attainment in literacy and numeracy through these activities.

Some ten years on, and having undertaken a change in career direction from teacher to science teacher educator, the researcher instigated a CU in a different location in the North of England on the campus of a University. The principles were discussed with the then Head of Department '1' who gave their consent to the researcher setting up the CU as long as it didn't interfere with the researcher's other duties. At this stage it is worth pointing out that Head of Department '1' then left the University and could not be subsequently interviewed. New Head of Department 'A' replaced this individual. Consequently the author is responsible for managing the CU, delivering its sessions as CU tutor and researching the needs of stakeholders involved in the formation of this CU. Stakeholders are the individuals involved in the formation and implementation of the CU such as the CU manager, tutors who deliver modules, teachers, children, parents and mentors. The local CU was registered with the National Children's University at the earliest opportunity.

1.5: Where is the research being conducted and why?

A programme was developed in order to initiate the local Children's University. Four schools were initially invited to take part but six more schools joined over the course of this study. The focus for learning was agreed with each school as was the target class or classes. Undergraduate teacher trainees were to act as mentors to scaffold the learning of pupils and to simultaneously develop positive relationships. It was intended that the author would lead the sessions, modelling effective pedagogy to observing class teachers and others within the school community such as parents and governors. The role of teacher trainees as pupil mentors by a Higher Education Institution in this way, and on this scale, is unique. Student participation is voluntary. The invitation to students to participate was measured, so that response could be tailored to logistical need, e.g. to arrive at appropriate pupil-student ratios. Nevertheless, approximately 25-50% of both the first year and second year undergraduate cohorts volunteered to take part.

This local Children's University exhibits differences to the National CU model as outlined above in Section 1.3. These include the role of Initial Teacher Education students, training to become teachers, as pupil mentors. They were the principal mentors supporting pupils. In addition, the input offered and the curriculum focus was to be decided by the school with the aim of meeting school, teacher and pupil need.

This variant of a CU adopts the module structure of the national model in terms of programme or 'module' timings and use of supporting mentors but it differs from the original, national model in that it can take place during normal school hours. This would be in response to the request of the individual school. In addition, the mentors are virtually all students who are training to be teachers rather than, as in the case of the national model being individuals drawn from the community. This removes the need to train mentors to be able to fulfil their role because they are already familiar with pedagogy, subject matter and expectations. This may mean that the qualities, skills or dimensions offered by mentors drawn from the wider community, are not available to the children. The modules in this case are identified by the school rather than being imposed on them, as is often the case with the national model. Content, in the latter case, is often a result of tutor interest or expertise.

The rationale underpinning the formation of this CU variant is that the initiative is an example of 'Outreach', i.e. a way in which the University can forge productive links with the local community through services and learning partnerships thereby embedding the University at the heart of that community. Thus it may support the Widening Participation agenda. This highlights a major difference between this local CU and other Children's Universities nationally, i.e. that the former is managed by a University tutor with the support of his University employers whereas a CU found nationally is largely operated as a centre that is part of a national network. People who manage a CU as part of this national network do so as their sole employment.

Furthermore, in terms of rationale, this study arose from a desire to provide students with opportunities to see modelling by leading practitioners working with a variety of age groups; to address a need for tutors to maintain their professional primary teaching skills and in so doing keep abreast of the latest developments in the primary classroom at first hand; to ensure that school

based mentors and classroom teachers who oversee students in Partnership Schools are aware of the practice of University tutors and of their associated pedagogy and resultant expectations of students; and to extend the variety and breadth of school experience available to our students.

Finally, and importantly, the local CU seeks to inspire children to strive to reach their potential as individuals, friends, learners and model citizens.

1.6: The research aims

The research project is exploring what may be described as a sensitising concept around 'the needs of stakeholders in the formation of a Children's University (CU)'. It also aims to investigate the issues and drivers influencing those needs. In such a situation, stakeholder needs are emergent as the project develops and so this presents the researcher with the task of researching a 'moving target'. Stakeholders can be defined as the individuals involved in the formation and implementation of the CU such as the CU manager, tutors who deliver modules, teachers, children, parents and mentors.

1.7: The research objectives

The research objectives are constructed as data are collected and analysed. They are liable to change during the course of the research and because of the nature of Grounded Theory Methodology it is difficult to specify them in any great detail.

As a consequence of the 'moving target' nature of the topic, a research approach was needed which could afford the flexibility, responsiveness and reflexivity necessary for such a task. A variant of Grounded Theory was developed as this enabled the researcher to shape and refine research objectives as data were collected and as the needs of the stakeholders for this particular CU emerged.

Grounded Theory Methodology is manifested in a large number of variants as exemplified by key exponents in the field. These are, principally, the initial pioneers Glaser and Strauss (1967) following what may be described as the 'classical variant'; Strauss and Corbin (1998) who placed greater emphasis on rigorous analytical methods that moved away from the classical variant in terms of introducing some inflexibility; Charmaz (2006) who postulated constructivist

Grounded Theory which is rooted in pragmatism and involves the researcher's construction of data through interactions with the field; and Clarke (2005) who recommends use of situational analysis to build on pragmatic, emergent and constructivist elements of a Grounded Theory approach. There are also a multitude of interpretations of these core versions as researchers mould a methodology specific to their epistemological and ontological needs. With this in mind it should be noted that they should adhere to the rigour manifested in the core variants. When this is the case the research process and its outcomes will be original, sometimes surprising but certainly valuable to the field. This is because findings and resulting theory are grounded in the data gathered as the researcher develops sensitivity to aspects of the field and its actors.

This researcher adopted what may be described as a constructivist approach to Grounded Theory. It was firmly rooted in pragmatism and involved construction of data through social interactions in the field.

Analysis may indicate factors that impact on stakeholder need and these will be subsequently pursued in more detail.

1.8: Initial concerns

When considering the nature of this study and the nature of its human and organisational participants, the researcher developed concerns at two levels. Firstly, there were broad concerns related to aspects such as political issues, large organisations and key stakeholders within them. In addition there were concerns about issues such as the researcher's positionality (discussed in Chapter 4) and the researcher's previous experience.

The very nature of the area of education is complex in terms of its many internal and external drivers. An exploration of the history of education in the United Kingdom reveals that there have been periods of great change. The current pace of such change is rapid, particularly since the speech by the then Prime Minister James Callaghan at Ruskin College (Callaghan, 1976) and the ensuing Great Debate on education. There are an increasing number of initiatives for educationalists to come to terms with. There are major ones such as the introduction of the National Curriculum, Every Child Matters and Excellence and Enjoyment but there is an even greater number that develop as a result of these major initiatives. For instance, introduction of the National Curriculum

necessitated a refocus on assessment with major impetus being given to Assessment for Learning. Every Child Matters meant the implementation of much training on issues such as Child Protection and Personalised Learning. Excellence and Enjoyment required teachers and teacher educators to address creative pedagogy with a resultant need to develop confidence in subject knowledge. There is a great demand for training on such issues. The impact of this is far reaching and the effects bewildering for many teachers. These initiatives and changes in direction and policy can often be linked to changes in national government and the economic, cultural, social and political climate at the time.

Concerns, related to the conduct of the research, arise from the rapid political change described above. At a fundamental level it must be noted that the current National Children's University network was largely funded by the Department for Children, Schools and Families (DCSF) within the United Kingdom government. The DCSF became the Department for Education (DfE) on formation of the Coalition Government in 2010. In short, the National Children's University receives some of its funding from Government and this policy could change at any time with detrimental impact on Children's University operations. Such a situation could have implications for the on-going execution and outcomes of the research study. It may also affect the motives or actions of the stakeholders in the formation of the local Children's University as they assess the potential desirable outcomes of change and adjust processes and systems in order to achieve these outcomes. These adjustments may be general in relation to broad school policy development or more specific in relation to participation in the local Children's University.

Political impact may occur at an Institutional as well as at a national level. For instance, national politics may also have an impact on other non-human stakeholders in the formation of the local Children's University. For instance, schools may alter their enthusiasm to participate in the local Children's University as a result of policy change, e.g. in new approaches to assessment or further additions to the curriculum, putting pressure on their available time for curriculum delivery. Personnel change within schools too and the personal enthusiasm and commitment of individual teachers may be lost to the detriment of the local Children's University. The University gathers much of its funding

through student fees. The University, therefore, seeks to attract and maintain a desired number of students. The University's willingness to support involvement in a local Children's University may be affected by changes to features such as funding streams and student applications. Departments within the University are also subject to change in terms of structure and staffing. The commitment of the researcher's Head of Department may change and could result in withdrawal of support. There may be various reasons for this. Some may arise as a result of institutional drivers or from the vision of the Head of Department. There is further discussion related to this in Chapter 4. That vision may be rooted in professional enthusiasm for the local Children's University initiative and its impact on community and community of practice.

To summarise, these times of great political and educational change at institutional, local and national levels may have a bearing on how the research is conducted and how it progresses. In essence there is a significant issue due to the fluid nature of stakeholder interest.

This issue is compounded by the fact that the research is being conducted on two layers. This arises from the fact that the researcher is undertaking the role of local Children's University Manager as well as the role of researcher. Factors related to this aspect are discussed in Chapter 4. It can be stated here that the researcher has a strong motive for maintaining the on-going formation of a local Children's University, despite the political drivers detailed above, because of the need to collect and analyse sufficient relevant data with which to produce worthwhile research outcomes.

Chapters 1 to 4 will provide insight into the aims of the research and how it will be carried out.

More specifically, in this Chapter, i.e. Chapter 1, there is an indication of the aims of the research and why it is being carried out. It also places the research into context.

Chapter 2 discusses research methodology with a particular focus on Grounded Theory Methodology. This was the methodology identified as being appropriate for this research. This chapter seeks to justify that selection and it discusses, in particular, the identification of the chosen variant of Grounded Theory Methodology.

Chapter 3 identifies the selected research methods and is underpinned by consideration of ontological and epistemological factors. There is also discussion of methods of data analysis and of how constructed theory is authenticated.

Chapter 4 contains discussion of the issue of researcher positionality. This is of particular importance in this research because of the experiences that the researcher brings to the research field and, perhaps more significantly, the fact that the researcher is managing the local organisation that is the focus for the research i.e. the formation of a local Children's University. There is also consideration of how ethical considerations are addressed and the procedures taken to adhere to University Guidelines.

Chapter 5 examines the research context in more detail. It describes the nature of human and non-human (e.g. an organisation) stakeholders.

Chapter 6 considers how initial data, and its subsequent analysis, gives early indications of emerging categories and the needs of stakeholders.

Chapter 7 discusses the analysis of more data in greater depth following theoretical saturation. There is examination of data and categories achieved using manual methods and with the assistance of NVivo software.

Chapter 8 provides details of the generation of theory based on key categories that emerged from analysis of data.

Chapter 9 contains a review of the substantive literature available that relates to the key categories that emerged.

Chapter 10 discusses aspects of this literature with reference to associated key evidence drawn from data.

Chapter 11 comprises a reflection on key outcomes and associated concluding comments.

1.9: Summary

This chapter has sought to examine the context of the research and to provide an insight into its initial aims. The next chapter will explore the selection of the research methodology.

Chapter 2: Methodology

In trying to identify a suitable methodology for this study it is prudent to consider the possibilities offered by quantitative and qualitative research. Bryman (1988) provided us with an authoritative text that discussed them in an informed and thought-provoking manner. He suggested, in a nutshell, that 'quantitative research is typically taken to be exemplified by the social survey and by experimental investigations. Qualitative research tends to be associated with participant observation and unstructured, in-depth interviewing.' (1988, p. 1). Before an appropriate methodology can be developed, thought should be given to the researcher's ontological and epistemological viewpoints, as it is these that will underpin the proposed path of his research.

2.1: Relationship between epistemology/ontology and methodology

Having identified an area of research interest it was important to reflect on its inherent features and to identify an appropriate methodology through which to conduct the research. Consequently there was a need for consideration of the writer's standpoint on the fundamentals of research with respect to ontology and epistemology. Cohen et al (2007, p. 5) suggest that 'ontological assumptions give rise to epistemological assumptions; these, in turn, give rise to methodological assumptions'. To some extent this is borne out by Crotty (2003, p. 4) who intimates that epistemology informs theoretical perspective which informs methodology which, in turn informs choice of methods. Crotty (2003) uses the term 'theoretical perspective' as being synonymous with what Blaikie (1993), amongst others, calls ontology. Thus, in summary, the research design is founded in the ontological stance (the study of being, of the nature of existence and the structure of reality – what Crotty (2003) calls the 'what is') and with the epistemological stance (concerned with the knowledge to be acquired and 'how we know what we know' (Crotty, 2003) in tandem.

The writer believes that, in terms of epistemology, knowledge is personal to the individual and furthermore that it is subjective. Reflection on all of this indicates that we are leaning towards a subjectivist rather than an objectivist paradigm.

Conversely, the writer believes that a researcher should construct a research design that facilitates identification and validation of theory in an ethical manner and appropriate to the context. This may mean adopting quantitative, qualitative

or mixed methods approaches. To take this further, it may resemble features of pragmatism as derived from the work of Mead (1934) and more recently Cherryholmes (1992). Pragmatists do not subscribe to any particular philosophy and select tools, often both quantitative and qualitative, to help provide the best understanding of the research question. Findings put forward the truth and the 'truth is what works at the time.' (Creswell, 2009, p. 11) This notion of truth, or theory, is in keeping with the scientist who states that a theory is only true until it is developed to become more sophisticated or is disproved. In developing this stance further, it is worth considering the symbolic interactionist perspective of one of Mead's students, Herbert Blumer, because it is in close alignment with this writer's thoughts in relation to stakeholders in the Children's University. Blumer (1969, p. 2) says that 'human beings act towards things on the basis of the meanings that these things have for them' and also that 'the meaning of such things is derived from, and arises out of, the social interaction that one has with one's fellows'. The writer's situation within his CU project is encapsulated by Blumer (1969, p. 2) when he states that 'these meanings are handled in, and modified through, an interpretive process used by the person in dealing with the things he encounters'.

So, in formulating a research design for the CU project, the writer's experiences and the underlying philosophical perspective he offers, thus far, do not lend themselves to positivist approaches. However, as Creswell (2009, p. 3) suggests, 'the selection of a research design is also based on the nature of the research problem or issue being addressed... and the audiences for the study.'

In terms of the nature of the research problem, as stated earlier, the study set out to identify the needs of CU stakeholders. It was not the intention to quantify these needs in any way at the outset. It was the intention to explore possible relationships between those needs and to identify the factors or reasons generating those needs. Thus, in a sense, any theory relating to the research would not be manifest at the beginning of the project (to be evaluated in a positivist sense for instance) but would evolve near the end of the study. To explore further the potential for inclusion of quantitative methods in this study it is worth exploring the nature and place of theory.

The place of theory has been the subject of great debate. Its definition, in terms of research, has led to some writers e.g. Denzin (1970) suggesting that it exists

at various levels. Lack of space prevents full discussion here so it will be considered in general terms.

Blaikie (1993, p. 143) states that 'In the context of research design, a theory is an answer to a 'why' question; it is an explanation of a pattern or regularity that has been observed, the cause or reason for which needs to be understood'. In an evaluation of Thomas's (1997) text, Creswell (2009, p. 71) suggests that the former says that theory 'unnecessarily structures and constrains thought.' and that 'Instead. Ideas should be in constant flux and should be "ad hocery" as characterised by Toffler.' Blaikie (1993, p. 143) goes on to say that Merton (1968) suggests that post hoc theorizing is an unsatisfactory use of theory. Merton (1968, p. 39) says that 'Sociological theory refers to logically interconnected sets of propositions from which empirical uniformities can be derived.' This is in keeping with the construction or generation of theory undertaken in the CU project but hints at the need for some measuring or quantifying of patterns.

The writer also believes that social reality is constructed as a consequence of the knowledge of individuals. If we considered that the study was to examine the local CU as an organisation then, in trying to make sense of that organisation, we would have to examine the personal views of the participating members because these stakeholders are the ones shaping the organisation. So, the concern is more with individuals rather than the whole. Ontological properties as defined by Mason (2002, p. 15) in this case comprise people as social actors who express attitudes, beliefs, ideas, views and perceptions about their experiences of the CU. Allied to this there is the epistemological perspective by which we can gain knowledge and understanding of these properties. The participants may provide us with knowledge of their needs from involvement with the CU and this may be acquired through interviews, questionnaires or observations. Their views will be personal and in some cases may be unique to them.

The study is aiming to gain an understanding of the thoughts, feelings, needs and motives of individuals. It is not trying to measure, evaluate or justify something. The investigation does not largely lend itself, therefore, to pursuit of positivist traits. Adoption of anti-positivist ideals is upheld by the view that the schools where the CU will take place are complex in terms of social

interactions. These interactions take place in varying degrees. They are not fixed and are often unpredictable. This is a feature, according to Pisek and Greenhalgh (2001), of complex adaptive systems. They go on to say that such unpredictability is ever present in such systems and that some aspects of the system will remain unknowable. 'A complex adaptive system is a collection of individual agents with freedom to act in ways that are not totally predictable and whose actions are interconnected so that one agent's actions changes the context for other agents.' (Pisek and Greenhalgh, 2001, p. 625). The system in this case is the Children's University and its stakeholders are the agents. The situation is such that actions, processes, events or contexts cannot be explained in terms of logical, mechanistic or reductionist thinking. In these reductionist systems the boundaries are fixed or well defined. This is not the case with the CU complex adaptive system. Here we have what Pisek and Greenhalgh (2001, p. 625) call 'fuzzy' boundaries. The membership of such a system may change and one agent may be a member of more than one system. The thoughts and actions of participants in the CU will be shaped by the context and by the learning environment. They may change over time. This is borne out by Pisek and Greenhalgh (2001) who state that, because agents can change then the complex system, in this case the CU, can adapt its behaviour over time. Agents, or stakeholders, behave as a result of a set of internalised rules and these rules, themselves, are not fixed. Furthermore they might not be shared by other agents. Importantly, in the case of this study, Pisek and Greenhalgh (2001, p. 625) claim that 'interaction leads to continually emerging, novel behaviour'. They go on to say that a weakness of reductionist thinking is its inability to account for surprise or emergent phenomena. Such considerations have a huge bearing on consideration of methodology. The positivist researcher could find meaningful data elusive. Indeed, the notion of complex adaptive systems in relation to formation of a local CU emphasises the fluid nature of the research and the difficulties faced by the researcher.

This researcher engages fully with the CU community in schools and attempts to both gain and create knowledge by interacting with that community and by seeing how participants interact with each other. This situation fits with what Creswell (2009, p. 8) calls a Social Constructivist Worldview. In discussing this approach Crotty (1998) suggested that constructivist researchers gather meaning by asking open questions of the actors by visiting them in the context

of their setting, so that participants can share their views. He states that such an approach is inductive. This adds further weight to the adoption of qualitative methodology for this study. Furthermore, there are no predetermined theories on the part of the researcher. The views of people are central to the research findings and those views cannot be fully anticipated. In addition, it is difficult to explore the context for the research because there has been relatively little research in this area of CUs in general and none to date in the case being researched. It was anticipated that gathering of, and reflection on, the thoughts of the CU stakeholders would allow theory to emerge from such data. Consequently the underlying features may appear to represent an approach to, or a variant of, Grounded Theory Methodology.

2.2: Selection of research methodology

Having discussed the theoretical and philosophical considerations necessary in construction of a suitable research design, it seems timely, then, to discuss selection of an appropriate methodology.

Initial thoughts centred on the adoption of Grounded Theory Methodology and why this might be used in preference to other methodologies. Kathy Charmaz (2006, p. 2) answers this question by stating that ‘...grounded theory methods consist of systematic, yet flexible guidelines for collecting and analysing qualitative data to construct theories ‘grounded’ in the data themselves.’ In short, the intention is to learn what actually occurs in the various settings related to formation of the Children’s University by studying stakeholders’ statements and trying to make sense of them analytically.

The study will take place in situ, i.e. features will be explored during the course of the formation of the Children’s University. With this in mind it is felt that grounded theory methodology can be applied to this study. Data will be collected from the very beginning of the study. Furthermore, analysis of these data will commence near the beginning of the study and this coincides with the start of the establishment of this local CU. This reflection on, and exploration of, findings will support the fine-tuning of research methods and analytical skills. On-going outcomes will inform the path of the research and shape methods, notions and theories that may improve the accuracy of the findings and the

answer to the main research question, i.e. 'What are the issues for stakeholders informing the development of a local Children's University?'

As stated earlier, the research project aims to understand the needs of stakeholders involved in the formation of a Children's University, and to identify if these needs are being met through actual delivery of the initiative. Ideally the researcher enters the field with an open mind and with no predetermined assumptions or hypotheses. This researcher felt that, in this variant of Grounded Theory, it would be impossible not to bring previous experience to the field. The researcher is also the manager of the local Children's University and is committed to its successful formation. This issue needs to be recognised and taken into consideration during data collection and analysis. This is achieved through vigilant reflexivity by the researcher, particularly regarding features relating to relationships and interaction with other stakeholders (see later in Section 3.2) Further to this, the researcher, on analysing collected data, identifies key issues, patterns or themes that emerge. Emerging categories comprising concepts or areas of knowledge may be connected with the primary aims or they may be entirely different. This may necessitate a refocusing of the original research question or may seed ideas for developing the research further.

The study takes place in situ, i.e. data is gathered during the course of the formation of the Children's University. Analysis of these data commences near the beginning of the study and reflection on, and exploration of, findings support the fine-tuning of research methods and analytical skills. More specifically, a constant comparative method is employed where data are collected, analysed and compared with previous data so that resulting themes and categories are continually refined and developed. On-going outcomes inform the path of the research and shape methods, notions and theories that may improve the accuracy of the findings and the answer to the main research question, i.e. 'What are the issues for stakeholders informing the development of a local Children's University?' This deep immersion in data collection and analysis, subsequent construction of analytical codes and categories and constant comparison of outcomes at each stage of the process is representative of the Grounded Theory work of Glaser and Strauss (1967). The methodology fits with this writer's epistemological stance. Glaser and Strauss's initial work appeals to

the writer because it had its roots in a positivist focus on treatment of data. This is perhaps not surprising because of Glaser's positivist roots (Bryant & Charmaz, 2007, p. 34)

There has been relatively little research undertaken into aspects of Children's University. Notable exceptions are the studies carried out by MacBeath and Waterhouse of the University of Cambridge in 2008 and 2010. Their research provided an evaluation of activity undertaken by a network of local CUs. There is even less research apparent, if any, related to aspects of the formation of a local Children's University, the needs of its stakeholders and factors driving those needs. This situation should be borne in mind when considering methodology for this current study. There is scant focus on issues of stakeholder need as evidenced at source, i.e. voiced by stakeholders in the field. Lack of available literature makes establishment of context for the study difficult but, more importantly, does not impart any credibility or justification of the initial and main research question that is 'What are the issues for stakeholders informing the development of a local Children's University?'

In a sense, the work carried out by MacBeath et al (2008, 2010) is not 'ground breaking' research as exemplified by an open ended, exploratory approach. Perhaps it can be best described as an evaluation as it seeks to determine strengths and areas for development of a funded initiative, i.e. the National Children's University. Cohen et al (2007) suggest that evaluation and research can be thought of as discrete entities that share some features such as methodology and methods but are markedly different in terms of their central purpose. What Cohen et al (2007) describe as 'blue skies' research is driven, they say, by the desire to find something original in the substantive field and to extend knowledge or develop theory. Evaluative research strives to determine how successful a given theory (in the case of MacBeath et al this may be the intended outcomes and milestones set by the Children's University) has been. Cohen et al (2007, p. 41) suggest that this approach can be dangerous because, in a sense, 'it enables others to set the research agenda'. Evaluative research can lead towards scientific method. In a positivist sense it tries to quantify the extent to which predetermined hypotheses are achieved. Thus such research may follow quantitative methodology.

Initial data is collected through interviewing of key stakeholders, specifically adult participants such as teachers and student mentors. These took place prior to delivery of learning and teaching sessions in the Children's University context. The data collected and analysed inform subsequent question formation and consequently shapes future data collection in keeping with grounded theory approaches aligned with simultaneous data collection and analysis. Children will be interviewed and subsequent data adds value to the overall analysis.

We must not forget that Grounded Theory Methodology, in its 'classical' variant as defined by Glaser and Strauss (1967) has its roots in positivism in the sense that its strict adherence to a rigorous research process and systematic treatment of data. Bryant (2002, p. 29) in discussing the work of Glaser and Strauss states 'Glaser and Strauss were quite explicit about this, indeed they stressed that the method must adhere to scientific rigour'. Bryant (2002, p. 31) goes on to say that 'Grounded Theory Methodology appears indelibly positivist' although this is not stated specifically in the work of Glaser and Strauss. Furthermore, Grounded Theory Methodology requires the researcher to be skilled in pattern seeking when dealing with data. Goulding (1998, p. 52) suggests that 'contrary to popular belief, grounded theory research is not "atheoretical" but requires an understanding of related theory and empirical work' which adds weight to an indication of a scientific way of working. The words of Glaser (1994, p. 198) can be used to summarise the potential use of quantitative methods in Grounded Theory Methodology thus 'The freedom and flexibility that we claim for generating theory from quantitative data will lead to new strategies and styles of quantitative analysis ... that will bring out the richness of quantitative data that is seen only implicitly while the focus remains on verification.'

The place for quantitative research in such a study must be considered bearing in mind the features of its methods. These are allied to scientific method, with talk about variables, control, measurement and experiment. Bryman (1988, p. 12) suggests that such procedures may 'provide an epistemological yardstick against which empirical research in the social sciences must be appraised before it can be treated as valid knowledge.' This notion of participant observation is revisited when he suggests that some workers viewed it as 'a procedure for developing hunches and hypotheses to be subsequently

corroborated by the more rigorous survey, experiment or whatever.’ (Bryman, 1988, p. 2).

Aspects discussed earlier indicate that a qualitative approach would be more appropriate to adopt for this project. This is because, to put it more succinctly, it is necessary to collect rich data in order to assemble a clear insight of the opinions of CU stakeholders. Furthermore, as discussed, it was hoped to generate hypotheses that may or may not be related to stakeholder need but may, or may not, be interrelated in some way. As a result of this unstructured, open-ended approach it seemed appropriate to use a variant of grounded theory methodology in a qualitative way.

The fact that the writer was an active participant observer generating data principally through unstructured interviews meant that many of the criticisms of positivist approaches appeared to be negated. Wittgenstein (1974) commented that when all scientific questions have been solved they have left untouched life’s major problems. This is supported by Habermas (1972, p. 300) who stated ‘Positivism is unable to answer many interesting or important areas of life’. Cohen et al (2007, p. 18) suggest that ‘The difficulty in which positivism finds itself is that it regards human behaviour as passive, essentially determined and controlled, thereby ignoring intention, individualism and freedom’. The commonly accepted methods of quantitative approaches, as mentioned earlier e.g. surveys or structured questionnaires, might not yield the richness of data associated with being human, being unique and unpredictable.

2.3: Arguments against Grounded Theory Methodology – issues for consideration

Although it is claimed by many theorists (Charmaz, 2006, Glaser & Strauss, 1967) that Grounded Theory Methodology offers a structured approach to development of theory, it is not without its critics. Some studies have been criticised for being too descriptive rather than theoretical. Other observers (cited in Charmaz, 2006, p. 133) are concerned about preconceptions, the nature of induction and procedures themselves. In addition, Burawoy (1991) argues that grounded theorising results in ‘astructural analysis’ and implies that inductive methods and decontextualised generalisations contribute to that result (Burawoy, 2000, cited in Charmaz 2006, p. 133). This draws comparison with

Wood and Wardell's study (1983, p. 85) that contrasts Mead's Social Behaviourism with Symbolic Interactionism in which they say that the latter fails to deal with social structure adequately. It would seem prudent to base this current study on a constructivist grounded theory methodology that is steeped in ethnographic principles. Burawoy's concerns seem to be largely aimed at objectivist grounded theory (Charmaz, 2006, p. 134) where he suggests that they derive from theorists' efforts to attain generality results in a decontextualisation of categories and emerging substantive theories. This researcher believes that constructivist grounded theory methodology ensures that an adherence to more interpretivist traits accommodates release from the objectivist straitjacket. It means that care is needed to ensure that categories derived are fully interrogated by the reflective, reflexive researcher, i.e. that 'hunches' are not accepted without due consideration. Charmaz (2006, p. 135) summarises this by observing that 'critics often reify early grounded theory statements' and that 'a superficial study may result that may skirt the border of a category without explicating it'. Bryant & Charmaz (2007, p. 36) highlight other critics of Grounded Theory Methodology such as Emerson (1983) who stressed its epistemological naivete; Lofland and Lofland (1984) describe its slipshod attention to data collection; Charmaz (2006) outlines its questionable justification of small samples; and Silverman (2001) is concerned about formation of trite categories. A worst-case scenario in which 'theory generation continues to be the unfilled promise' (Charmaz, 2006, p.135) is evoked by Miller (2000, p. 400) when he says 'although grounded theory is often invoked as a methodological strategy, ironically too little grounded theory is actually done'. This dilemma can be avoided in the current study if constructivist grounded theory methodology is the main driver supported by ethnographic method. It may produce rich data and valuable theory but it also repels the claims of Grounded Theory critics because the structure necessitated in analysis of data and subsequent theoretical saturation ensure validity of results. The critics claims were that the original variant was rooted in positivist approaches resulting in verifiable data and sound theory but that subsequent versions relied on incorporation of more subjective methods. This researcher argues that a strength of Grounded Theory Methodology lies in the fact that its potential to generate original groundbreaking theory drives researchers to question its

reliability and to address any resultant shortcomings in deriving more epistemologically acceptable variants.

2.4: Grounded Theory Methodology... or something else?

It has been stated that the local CU study lends itself largely to a qualitative approach. The word 'largely' is used because such research is complex and does not necessarily contain all elements of the definition of qualitative research that has been derived by workers such as Bogdan and Biklen (1982, p. 27-30).

They suggest that:

1. Qualitative research has the natural setting as the direct source of data and the researcher is the key instrument
2. Qualitative research is descriptive
3. Qualitative researchers are concerned with process rather than simply with outcomes or products
4. Qualitative researchers tend to analyse their data inductively
5. 'Meaning' is of essential concern to the qualitative approach.

So the qualitative research methodology adopted in this study is concerned with how situations, contexts and beliefs of the actors arise naturally from the setting or settings as opposed to a quantitative research methodology where those features mentioned are predetermined. Data was gathered using the accepted qualitative method of very open, almost non-directed interviews and focus group interviews in the effort to investigate how individuals and groups of actors engage with or make sense of Children's University activity within their setting.

In this research design, having decided upon an appropriate methodology, i.e. Grounded Theory Methodology, it seems prudent to try to justify selection of this approach from the many possibilities under the umbrella of qualitative research that possess similar features. Robson (2002, p. 164) goes as far as calling this a 'flexible design'. These designs may include phenomenography, ethnography, grounded theory, case study and action research. Attempting to determine the type of qualitative approach and to identify its 'theoretical underpinnings' (Bogdan and Biklen, 1982, p. 30) was necessary to enable the author to identify his 'theoretical base and use it to help collect and analyse data.' Bogdan and

Biklen (1982) suggest that all qualitative researchers reflect a phenomenological perspective. They go on to say that phenomenologists 'attempt to understand the meaning of events and interactions to ordinary people in particular situations.' (Bogdan and Biklen, 1982, p. 31). Phenomenologists try to understand how people construct meaning from real events through social interaction and from their own point of view.

In addition to this, in this study, the researcher was gathering data as a participant in the setting. He engaged with other actors in their settings as he carried out observations and conducted interviews. For a particular setting these data can be thought of as subjective in terms of how it was collected, analysed and interpreted. The data was a manifestation of the thoughts and actions of the actors in specific settings. It was not the intention to quantify observations or participant responses in a scientific, positivist or normative sense. Such an approach may conjure up notions of 'standing outside and looking in' rather than doing the looking as an active participant. Furthermore, having gathered this qualitative data set, inferences were drawn from the latter through a process of reasoning that lies somewhere along the spectrum between Aristotelian deductive reasoning and Baconian inductive reasoning. The former aligns itself with normative traits. The latter is representative of interpretive action.

The writer did not believe that the actors, be they children, teachers or students, were governed by rules or that their actions were predetermined or imposed upon them in some way. This would fit with normative or positivist thinking. Instead, the writer opined that the actors and their actions were subjective and arose from their settings and their previous experiences. The writer, in the course of this study, pieced together an interpretation of the actor's responses and any related observations. Thus, the writer pursued what Cohen et al (2007) called the anti-positivist or interpretive tradition. Cohen et al (2007, p. 21) go on to say that the interpretive paradigm tries to understand 'the subjective world of human experience'. Furthermore, and this was at the forefront of the writer's mind (not least in terms of introducing possible bias), Cohen et al suggest that in order to 'maintain the integrity of the phenomena being investigated, efforts are made to get inside the person and to understand from within'. Failure to adhere to this may have resulted in the writer's thoughts or some other external

feature impacting on the actors' points of view. As the writer was an active participant who was, certainly initially, integral to the success of the formation of the local Children's University, this factor and its implications for potential bias was of great concern. Consideration of the researcher's position will be discussed later (see below in Chapter 4).

As the researcher was engaged as participant to a limited degree, a variety of largely qualitative methodologies were considered. These included Grounded Theory, Ethnography and Phenomenology.

There was deliberation over the selection of ethnography or phenomenology as a suitable methodology for this study. The history of phenomenology as a qualitative methodology is very complex. In her comparative study of grounded theory, ethnography and phenomenology Christina Goulding (2005) described the work of Husserl (1962) and Schutz (1967). Goulding says that Husserl put forward the term 'life world', which represents a schema for describing and classifying subjective experiences within that world. Schutz (1967) developed this as a method to include details of experience at a more mundane level of everyday life (cited in Goulding, 2005). Goulding (2005, p 302) goes on to say that 'Schutz proposed that individuals approach the 'life world' with a stock of knowledge made up of common-sense constructs and categories that are essentially social in action.' From this phenomenology requires the researcher to reflect on social experiences so developing in-depth meaning from those experiences. Theory building as a result of this intense reflection is central to phenomenological methodology and as such is not a desirable trait required within this study. This is because this researcher is wary of bringing such predetermined constructs to the field because of the possibility of influencing data and subsequent emerging categories. This threat to validity of the research is exacerbated when there is, as in the case of this study, prolonged involvement on the part of the researcher (Robson, 2002, p. 174).

The author immersed himself in the processes of interaction played out by the participants. The former took part in proceedings and undertook participant observation of a non-covert nature. This involvement with the group lent itself to ethnographic methodology. These observations formed a small part of data collected in the early part of the study. As Schutz (1964) points out, even though the group and the setting are familiar to the observers, they will need to

treat them as 'anthropologically strange'. Hammersley and Atkinson (1983) state that such a situation means the inherent culture becomes an object for studying. They go on to suggest that even if the observer enters the field with preconceptions it is difficult to maintain them when confronted with sustained first-hand experience of participants' actions and interactions.

It seems prudent here to mention phenomenography as a methodology. Marton (1986) suggests that phenomenography is an empirical research tradition focusing on thinking and learning particularly in the context of educational research. It is concerned with the relationships that people have with the world around them. There are elements of the phenomenographic approach to be interpreted from this study.

This study will involve some participant observation, as it is essentially an ethnographic piece of research. Charmaz (2006, p. 21) suggests that ethnography entails recording the life (or actions) of a particular group and that the researcher undertakes sustained observation whilst participating in their setting. She says that it involves more than participant observation alone because it involves collection of other data including, possibly, interviews and questionnaires. It may involve more rigorous investigation of data that adds value to what may be construed as subjective observations, particularly as bias may come into play. A revised interpretation of ethnography in a grounded theory approach is offered by Charmaz (2006, p. 22) who states that 'grounded theory ethnography gives priority to the studied phenomenon or process – rather than the setting itself.' Moreover, the categories evolving and the data collected will be refined not just within a setting but between settings. There are other similarities. Meaning evolves from social situations and interactions. It may be said to be actively constructed but this may be a contentious statement because it hints at predetermined, conscious actions on the part of the researcher. The researcher must adhere to the principles of theoretical saturation in order to avoid any weaving of his own predetermined notions into development of categories. This is difficult because even Glaser and Strauss (1967) admit bringing their prior experiences to the research process. A further similarity is that 'attribution of meaning is continuous and evolving over time' (Cohen, Manion, & Morrison, 2007, p. 167). Also researchers generate rather than test hypotheses and they do not know in advance what they will observe

(Cohen, Manion, & Morrison, 2007, p. 168). The links between ethnography and grounded theory are strong. Indeed Wilson (2009, p. 264) suggests that ethnography is 'the child of both cultural anthropology and symbolic interactionism'. The glue here is symbolic interactionism because it influences both ethnography and grounded theory.

2.5: Adoption of Grounded Theory Methodology – but which variant?

Charmaz suggests that, by the mid-20th century, there was a general shift in the methodologies adopted by researchers towards positivist approaches. This meant that many researchers were developing hypotheses based on existing theories (Charmaz, 2006, p. 5). There is, of course, some value in this developmental way of working but research was rarely producing new theories. Glaser and Strauss (1967) challenged this way of working and developed an approach known as Grounded Theory.

Grounded theory methods were initially postulated by sociologists Barney Glaser and Anselm Strauss as a result of their studies of dying in hospitals. They investigated how and when professionals and their patients knew that the latter were dying and how they handled the news. They held conversations and made observations in the hospital settings and, in the course of doing this; they developed analytic techniques and methodologies in the field. Their book, *The Discovery of Grounded Theory* (1967), suggested developing theories grounded in data rather than deducing hypotheses from existing theories.

Their work occurred at a time when, in the USA, qualitative methods of research were being questioned. There was a major shift towards quantitative methods that were steeped in positivist values such as validity, verification and replication. This resulted in reducing qualities of human experience to quantifiable measures derived by unbiased, passive observers who collected facts but did not participate in the research setting. Resulting evidence was systematically analysed and logically formulated hypotheses were derived satisfying scientific method.

Initially, they suggested that Grounded Theory should comprise:

- Simultaneous involvement in data collection and analysis

- Constructing analytic codes and categories from data, not from preconceived logically deduced hypotheses
- Using the constant comparative method, which involves making comparisons during each stage of the analysis
- Advancing theory development during each step of data collection and analysis
- Memo-writing to elaborate categories, specify their properties, define relationships between categories, and identify gaps
- Sampling aimed toward theory construction, not for population representativeness
- Conducting the literature review after developing an independent analysis

Glaser and Strauss therefore challenged the distinct disciplines of qualitative and quantitative research. In the years following their initial proposals and their subsequent impact on the thinking of researchers, Glaser and Strauss themselves embarked on slightly diverging, if not conflicting, journeys with grounded theory. Glaser upheld his original beliefs that put forward grounded theory as a method of discovery in which categories emerged from the data. Strauss (1987), on the other hand, placed a bigger emphasis on verification and his later work with Juliet Corbin (1990 and 1998) accentuated this further. The work of the latter involved the use of new techniques and moved away from comparative methods. Glaser argued that these procedures forced data and analysis into preconceived categories and that it moved away from the original classic notions of grounded theory. Later workers such as Charmaz (2006), Bryant (2002) and Clarke (2003) moved grounded theory away from positivist elements that were apparent in the work of both Strauss and Glaser. Charmaz (2006, p. 9) stated that 'in their original statement of the method, Glaser and Strauss (1967) invited their readers to use grounded theory strategies flexibly in their own way.' She suggests that she took up that invitation to instigate the direction of her own work. The thinking of the latter three researchers is to be applauded in this respect. They suggest that, ultimately, it is the theory generated that is the desirable outcome and that this can be arrived at through

a variety of ways. It is the duty of the researcher to adopt the most appropriate methodology for the particular context of the study, i.e. it must be fit for purpose. The interplay between methodologies, be they quantitative, qualitative or embedded in grounded theory approaches, is crucial to the development of theory – one methodology should support another, almost synergistically.

The pursuit of grounded theory procedures, in the case of this study, may be the most beneficial methodology because there may be a greater possibility of building more significant theory. Richer, more valuable outcomes may emerge rather than if the study was set in the context of existing research. In the latter scenario the hypotheses would be derived from a survey of associated literature prior to undertaking subsequent research using a blend of quantitative and qualitative methodology. There is a chance that the researcher would be directed down specific avenues of enquiry initiated by the literature interrogated at such an early stage. This is discussed more fully in Section 2.7.

This study of a local Children's University begins with collection of data whereby the researcher is applying procedures embedded in Grounded Theory Methodology. This, in itself has several research design variants. Creswell (2008, p. 433) summarises them as three dominant designs that he calls a systematic procedure associated with Strauss and Corbin (1998)), an emerging design allied with Glaser (1992) and a constructivist approach (associated with Charmaz (2006).

Creswell (2008) suggests the systematic procedure is very detailed and rigorous. He intimates that it is more prescriptive than the original concept of Glaser and Strauss (1967). This design is characterised by the data analysis steps of open, axial and selective coding and the development of what Creswell (2008, p. 434) calls a 'logic paradigm or a visual picture'.

The emerging design is embodied by the thinking of Glaser who, having collaborated with Strauss (1967), became very critical of the latter's subsequent work, especially that with Corbin. Glaser felt that Strauss and Corbin placed too much emphasis on rules and procedures. Glaser felt that the theory should emerge from the data through constant comparative coding of incidents with categories and categories with categories. The focus is, as Creswell (2008) states, on connecting categories with emerging theory. Glaser says that

Grounded Theory in this variant should exist at a most abstract conceptual level rather than at a more minimal abstract level found in visual data presentations such a coding paradigms. He says that theory should not be forced into categories but grounded in data. Glaser (1992) says that grounded theory should meet four criteria: fit, work, relevance and modifiability. In essence, if the theory works it will explain the behaviour of the actors and it will fit the reality as perceived by them. If it works then it has relevance. He suggests that the theory may be modified if new data arises.

It can be argued that Action Research also embodies an 'emergent' methodology (Dick, 2007). There are some fundamental differences. Action researchers are participative whereas in Grounded Theory studies the participants are present solely as informants (ibid.). It was highlighted above in Section 2.5 that the researcher in this study of a local CU was present, to a limited degree, as participant. Participant observations, however, were not significant and presence was in the capacity of interviewer. A key difference is that, in Grounded Theory methodology, it is the researcher, in isolation, who does the theorising by adhering to the implicit cycles of data collection and analysis through coding and memoing (ibid.). There are also strict guidelines on how to develop theory using Grounded Theory methodology whereas in Action Research it is the researchers who are active in developing and implementing results through close interaction with other participants (ibid.)

The constructivist design was put forward for consideration by Charmaz (2006) in various publications as an approach that lies somewhere between positivist (sometimes aligned with quantitative) attributes and postmodernist (ideological) features. The constructivist approach explores meanings derived from data and is informed by what the researcher brings in terms of experiences and values. Charmaz (2006, p. 15) suggests that we are not 'scientific observers who can dismiss scrutiny of our values by claiming scientific neutrality'. She goes on to say that 'neither observer nor observed come to a scene untouched by the world'. Once within the scene their relative stances may influence each other. It is only the researcher who will reflect on the scene and construct meaning. Charmaz (2006, p. 130) draws comparisons between constructivist grounded theory and objectivist grounded theory. The former gives priority to studied phenomena and, she says, 'sees both data and analyses as created from

shared experiences and relationships with participants'. It is thus part of an interpretive social research tradition. Charmaz (2006, p. 131) reflects on objectivist grounded theory as being part of the positivist tradition and that the data is 'real' and not giving prominence to how data is produced. The indications for this current study suggest that it is closely aligned to the Constructivist variant of Grounded Theory. Emerging theories are being generated through what Charmaz (2006, p. 132) calls 'plausible accounts' rather than being verified as in a positivist sense. Charmaz (2006, p.132) states that Constructivist Grounded Theory 'addresses how people's actions affect their local and larger social worlds'. Charmaz does take a stance that lies on a continuum with Gergen's (2001) 'constructionism' at one end and von Foerster's (Segal, 1986) 'radical constructivism' at the other. Furthermore, the constructivist approach is not necessarily conclusive. It develops conclusions often by posing questions for consideration or by being subjective. The researcher 'explains the feelings of individuals as they experience a phenomenon or process' (Creswell, 2008, p. 439). The approach eschews predetermined categories such as those found in axial coding (Creswell, 2008).

Clarke & Friese (2007) state that the former (2003, 2005) has extended Grounded Theory Methodology through the use of Situational Maps in data analysis. Clarke and Friese (ibid.) also support the constructivist stance taken by Charmaz (2006). In this study of a local Children's University the researcher investigated Clarke's use of Situational Maps for analysis. The approach was not adopted per se but it emphasised the possible use of diagrams to help to explore the relationships between stakeholders and possible construction of categories. Reflection on these diagrams also allowed the researcher to take stock of his position or situation.

2.5.1: Applying Constructivist Grounded Theory

It was identified, above, that Constructivist Grounded Theory was the preferred methodology for this study. There was some reflection on how this form was applied. Section 1.7 drew attention to the context of this study in terms of the complex nature of the field of education and the relationships between the various communities of practice of stakeholders. Sometimes these relationships could remain established for long periods but sometimes they could be transient. This fluid situation may arise as a result of the varied relationships

between stakeholders. Charmaz (2006, p. 188) provided a glossary of terms which included a definition of pragmatism where she indicated that it saw 'values as linked rather than separate and truth as relativistic and provisional'. Further to this Charmaz (ibid.) suggests that pragmatists are active and creative and through such actions people come to know the world.

In undertaking this study of a local CU, a pragmatic variant of Constructivist Grounded Theory Methodology was being applied.

2.6: The place of the literature review in Grounded Theory Methodology

We have seen, above, that Glaser and Strauss (1967) recommended that a review of substantive literature should be carried out only after data had been collected and analysed. Further to this Covan (2007), studying under Glaser and Strauss between 1974 and 1980 was told by them not to review the literature before beginning to analyse the data. Her peers were unsure about when to review literature because Glaser never provided them with any precise indication. There is evidence that Glaser (1978, p. 31) provided a general notion of when this was to happen in stating:

When the theory seems sufficiently grounded and developed, then we review the literature in the field and relate the theory to it through integration of ideas.

There is a problem in that many research-funding bodies require a literature review to be carried out as part of the funding application process. There are also other factors that may influence a researcher's decision to carry out an early review of literature including time constraints related to funding or publication deadlines or the need to provide contextual orientation or focus. In addition the researcher may want to check whether or not there were any existing findings in the proposed field of study. Consequently some researchers argue that it is beneficial to carry out an early literature review in order to pre-conceptualise the situation and to be informed in order to reflect on initial research questions. Lempert (2007) advocates the use of an early review of literature in order to achieve some orientation with the proposed area of study and Ford (2010) visits the literature throughout her study arguing that it represents additional data that can be integrated with data collected throughout her thesis. Indeed, Glaser and Strauss (1967) suggest that literature may be used as additional aliquots of data. The researcher, in keeping with the

intentions underpinning GT methodology, must not allow such prior knowledge to impact on the emergence of the theoretical framework.

This highlights one of the positive effects of researcher positionality in that, in this study of the needs of stakeholders during the inception and formation of a local Children's University, the researcher had informal practical experience of educational settings that helped in engaging with participants in the field but did not extend to extensive knowledge of substantive education-related literature. Dey (2007) recognises this dilemma and stresses that an open mind does not necessarily mean an empty head. In keeping with Lempert (ibid.) we cannot avoid some orientation with the field because of our prior experiences. The ideas held in our mind cannot simply be ignored.

This necessary reflexivity produced a fascinating focus on researcher position. On the one hand the researcher is present as a participant who engaged with other stakeholders with an open mind but on the other hand there was the need to maintain an awareness of potential influence and, in a sense, observe self and others as an outsider looking on.

The literature review for this study of a local Children's University was conducted after data collection and analysis had led to development of the initial theoretical framework. It sought to confirm the honesty and originality of the study and to provide data that could be used to inform development of the theoretical model. Charmaz (2006, p. 163) contends that literature reviews are sites 'in which you claim, locate, evaluate and defend your position'. Further to this, Glaser (1978, p. 31) says that:

when the theory seems sufficiently grounded and developed, then we review literature in the field and relate the theory to it through integration of ideas.

2.7: Summary

This Chapter has discussed the identification of a pragmatic variant of Constructivist Grounded Theory Methodology as an appropriate methodology for this study of a local Children's University. Attention now moves to selection of data collection methods and the analysis of data collected. This will be discussed in the next chapter.

Chapter 3: Consideration of Methods of Data Collection and Data Analysis

Having reflected on epistemological and ontological positions and arrived at a methodology that fits with these, it is crucial to select data collection methods that support these aspects. This chapter will discuss procedures of data collection and data analysis with some consideration of the strengths and limitations of particular methods. The notion of researcher positionality, during engagement with the field, is highlighted again in relation to potential influence on the integrity of data and the need for an awareness of this in the researcher's mind during data collection.

3.1: Epistemology and ontology in relation to Data Collection

The researcher needs to consider his epistemological stance when surveying the range of available data collection methods. Interviewing is the main method of data collection in this study of a local Children's University. Interviews often require related skills in order to probe participants thinking and elicit points of view but Mason (2002, p. 26) makes good sense when she asserts that 'while practical issues to do with training and skill are of course relevant in your choice of method they should not govern your choice...'

With his epistemological stance and his selected methodology in mind it is worth remembering that the interview is considered as a conversation or social interaction. This researcher's epistemological position is comfortable with the view that his interviews are a vehicle for generation or construction of data rather than extraction of it, i.e. in ontological terms, the knowledge, views and experiences are what are sought from the interview situation.

In selecting observation as a research method the researcher is of the epistemological opinion that not all knowledge in the field or setting can be achieved without observation. The observation may be of the participants in the real life setting as they go about things in context but it may be also be about how they conduct themselves in an interview situation, e.g. through use of body language. In other words these actions satisfy the researcher's ontological position.

3.2: Selected Data Collection Methods

Initial data will be collected through interviewing of key stakeholders, specifically adult participants such as teachers, student mentors and business-based mentors. These will take place prior to delivery of learning and teaching sessions in the Children's University context. The data collected and analysed will help to inform subsequent question formation and consequently shape future data collection in keeping with grounded theory approaches aligned with simultaneous data collection and analysis. This may seem prohibitive to piecing together a true, balanced snapshot of stakeholder perception of need particularly as the principal stakeholders are the children themselves. This aspect is addressed by the fact that grounded theory methods advocate a cycle of collecting and analysing new data and comparing outcomes with data collected previously.

The researcher will be immersed in the life of the school context but the situation is not wholly ethnographic because the facets of the community being studied are not sufficiently wide ranging. We have seen that a revised interpretation of ethnography in a grounded theory approach is offered by Charmaz (2006, p. 22) who stated that 'grounded theory ethnography gives priority to the studied phenomenon or process – rather than the setting itself.' Moreover, the categories evolving and the data collected will be refined not just within a setting but also between settings.

Having stated this it will be difficult to separate features relating to aspects of the Children's University from those common with the daily practices of the schools. Therefore in addition to those interviews held with stakeholders there will be associated features evolving from observations in the field of study. There are degrees to which researchers can participate in the act of observation. With this in mind it is important to consider whether this will be in the form of participant or non-participant observation. Definitions of the two forms of observation will be useful here. Gold (1958) suggests that the degree of participation in the process of observation lies on a continuum. At one end lies the complete participant. Cohen, Manion, & Morrison (2007, p. 404) state that the complete participant observer is part of the social life of all participants in the setting. They may take on an 'insider' role and may not even declare themselves as a researcher. We move from this along the continuum through

'participant as observer' to 'observer as participant' and, at the other end of the continuum, the complete observer. There is a move from 'complete participation' to 'complete detachment' (Cohen, Manion, & Morrison, 2007, p. 397). The researcher is also the manager of this local Children's University and furthermore engages with other stakeholders (such as children, teachers and undergraduate students) as an active participant undertaking activities such as teaching pupils (and possibly the observing undergraduates) or marketing the benefits of a Children's University. Research intentions were declared as part of the process of following ethical procedures. Consequently, the researcher could not be classed as an 'insider' but may take up a position further along the continuum and be labelled, largely, as 'participant as observer'. This can be considered to be the case because the researcher often plays an active central role in the field thereby effectively participating but making observations when appropriate. The case for being categorised as 'observer as participant' is not appropriate even when considering the fluid nature of the situation. During the throes of the teaching and learning experience, participation is never secondary to observation even though vigilance is paid in trying to identify opportunities for the latter. Data can be gathered from the physical setting, i.e. the learning space, from the human setting (aspects of the organisation of people within the learning space), the interactional setting (all manner of verbal and non-verbal interactions) and the programme setting, i.e. resources and their organisation, pedagogic styles and curricula (Morrison cited in Cohen, Manion, & Morrison, 2007, p. 397). All four settings are key aspects of the field in this study but the latter two may have a greater bearing on findings and it will be interesting to investigate this interplay and its effect on outcomes and emerging theories.

In addition, the observations themselves may be structured, semi-structured or unstructured. In the case of the former the situation is such that the researcher has an idea of what he is looking for, i.e. hypotheses are in place. This is not commensurate with the principles of this study. Observation methods and resulting data will generate hypotheses so they will be semi-structured or even unstructured in nature. This is certainly the case at the beginning of the study when there are no predetermined categories. There is the option of implementing more structured observations as the study evolves and categories begin to emerge. This is one way in which the researcher seeks theoretical saturation. There is a move from data that arises from interaction between the

participants, and interplay between participating institutions, to data that is a result of informed composition of an observation schedule by the researcher.

Bryman suggests that some workers viewed participant observation as 'a procedure for developing hunches and hypotheses to be subsequently corroborated by the more rigorous survey, experiment or whatever.' (1988, p. 2). If we were to consider the 'whatever' this may be with a view to adopting interview methods.

It is worthwhile exploring aspects of interview at this point. 'An interview is a directed conversation (Lofland and Lofland, 1984, 1995). An intensive interview permits an in-depth exploration of a particular topic with the person who has had the relevant experiences.

The writer believes that, in terms of Grounded Theory Methodology, the unstructured interview is possibly the most effective method for gathering rich, useful data. The writer enters the interview setting with a theme in mind focused around the broad research question, but is receptive to key issues that are important to the interviewee. Consequently there are no set interview questions and the interview is carried out in a very open, informal conversational style. It is envisaged that key features, worthy of further investigation, will emerge through the course of this interaction between interviewer and interviewees. This approach embodies inductive approaches. Mason (2002, p. 63) suggests that qualitative interviewing involves the 'construction and reconstruction of knowledge rather than the excavation of it'. In another sense, data is generated rather than simply collected (Mason, 2002, p. 68). This is also in keeping with the constant comparison method of data analysis that was put forward by Glaser and Strauss (1967). Furthermore, such an approach to, and choice of, interviewing as a method aligns with the thoughts of Creswell, supported by Crotty, and his Social Constructivist worldview referred to earlier.

Ontologically, the interviewees and the interviewer are social actors in the setting and exchange their thoughts and feelings about that context. Epistemologically, the knowledge being constructed is subjective and personal to the participants and, the writer believes, the interview is the prime method by which to elicit these thoughts with any accuracy in order to be confident in 'how we know what we know'. This is because the knowledge is situated with the

interviewee and derived as a result of the dialogic framework of the interview or, as Burgess (1984, p. 102) calls it the 'conversation with a purpose'.

The researcher, as participant, is active in this process and takes cues from the interviewees in order to progress the research. The situation is one in which there is not a list of predetermined questions to follow in sequence with each interviewee. The resultant data is possibly richer and resultant themes broader as a consequence of exploring different 'questions' or notions with different interviewees.

A key issue, if the procedures of Grounded Theory are to be strictly adhered to, is that the researcher enters the field without predetermined hunches or hypotheses. It is difficult to gauge whether this is entirely possible because such notions may reside in the researcher's mind, even if subconsciously. This brings to mind the issue of bias in data collection and subsequently in data analysis and conclusion but this aspect will be discussed in more detail later (see Sections 4.1 and 4.2). The researcher conducted initial interviews in a relatively unstructured format. Mason (2002, p. 68, 69) states that she does not believe that it is possible to have a wholly unstructured interview. She says that the interviewer should be clear about what they are interested in so that, as a result, they are able to judge what cues to pursue during the interview. This centres on the research question, as discussed earlier, that was initially one of exploration (i.e. 'What are the needs...?') but ultimately develops into an intellectual puzzle (Mason, 2002, p. 17) to try to explain why those needs are prevalent. An interview schedule and an extract from a transcription of one of this study's interviews can be found in Appendices A and B respectively (see pp. 278-279). Interviewing is a skilled process and rigorous planning is needed to facilitate an interview that will flow naturally. Extensive planning and piloting is desirable, or even necessary, otherwise the data generated will not be useful in trying to solve the intellectual puzzle or answer the research question (Mason, 2002, p. 75).

Interviews are the main method employed in this study. They build on the data available through observations of participation in the setting. Mason (2002, p. 85) suggests that observational methods may be used because the researcher has 'an ontological perspective which sees interactions, actions and behaviours and the way people interpret these, act on them, and so on, as central.' This

researcher empathises with this stance and the notion is strengthened when coupled with his epistemological position which suggests ‘that knowledge or evidence of the social world can be generated by observing, or participating in, or experiencing ‘natural’ or ‘real life’ settings’ (Mason, 2002, p. 85). This current study has seen this researcher working closely with teachers and their classes in their own settings. He has gained their trust and interacted using their language. As Mason (2002, p. 85) says the writer, in assuming the role of participant observer to gather data, has become ‘an interpreter or ‘knower’ of such data as well as experiencer...’. She goes on to say, and this writer concurs, that many devotees of observation believe that this situation arises because of the shared experience. As a result the researcher is ‘epistemologically privileged’ (Mason, 2002, p. 85).

Use of observation in this way, as active participant, gives early indications of emerging themes. This researcher was able to investigate these in more depth through the use of interviews. This active role raises some concern over bias and ethics. In terms of observation, for instance, it is important to consider the implications of covert and overt observation. Both may yield useful data and, in fact, the former may provide more valuable data than the latter because social actors may behave more naturally. However, ethics need to be borne in mind. Even if the actors are made aware of the observer’s research role, they may not be aware of the specifics or strategy of his data collection or its value to him in terms of its future use. In other words, as Fielding (2008, p. 272) says ‘ethnographers cannot signal when they are or are not collecting data.’ In terms of bias and skewing of data, there are issues related to the researcher’s position of wanting to instigate a successful CU. A successful CU can be defined as one in which participants derive a variety of benefits including social and educational. With this in mind, the systems and activities of a local Children’s University are subject to Quality Assurance through procedures and criteria laid down by a Quality in Study Support (QISS) agency (Canterbury Christ Church University, 2014). This local Children’s University was, indeed, successful in achieving accreditation and was described by the Chair of the QISS Scrutinising Committee as being ‘unique’ (see below in Section 10.3.2). The researcher, in striving to meet these criteria, needed to be aware of his related motives and actions when analysing data and, similarly, to probe actors’ interactions in

respect of them 'telling the researcher what they want to hear' in terms of interpreting data in a way that would indicate 'success'.

Thus, we have two data collection methods that are valuable to the project and which align themselves with the researcher's ontological and epistemological positions. They are both based in interpretivist, qualitative methodology and both allow interesting themes or key categories to emerge to produce potentially new theories. Both methods are capable of producing valuable, relevant, rich data in their own right. In this study, observation is used as a basis to signal initial themes and ideas prior to mining more detailed data, centred on these, by interviewing. In addition, the active, participant role adopted during observation provides opportunity for the observer to gain the trust and acceptance of the actors. This is aided by interaction using their language and protocols in their natural setting. The result is that this is further manifested in subsequent interviews. Interviews, especially when conducted by inexperienced researchers, can be awkward affairs that may result in data that is misleading or of little worth because interviewer and interviewee/s have not had opportunity to develop empathetic understanding. The synergy developed through using the two methods in this way helps to bring authenticity to the results.

There is a further source of data and that is the written memos of the researcher that are made when the original data (gathered from interviews and observations) is revisited and reflected upon. The writing of memos provides an opportunity for reflexivity. In having these conversations with self there is a chance to consider 'self' in relation to the subjects or participants. Lempert (2007, p. 247) indicated that early classical Grounded Theory methodology assumed the notion of 'neutral knower' but we have seen earlier in Section 2.6 that researcher positionality is recognised in this study of a local CU (as discussed in more detail later in Sections 4.1 and 4.2). This helped in the identification of patterns and categories in the development of theory.

3.3: Gaining access to population and selection of the sample

Having decided upon the methods by which to collect data it is necessary to consider how the schools and their pupil population might be sampled. Factors that have a bearing on this may include expense, time and accessibility (Cohen, Manion, & Morrison, 2007, p. 100). Thus a smaller section or sample of the

whole population is identified. The main factors influencing selection of the sample are the sample size, how representative it is of the whole population and how accessible it is.

When considering sample size of populations resulting in production of quantitative data it can be stated that the larger the sample size the better in terms of reliability of results but this may also depend on the nature of the study and the studied population (Cohen, Manion, & Morrison, 2007). For qualitative studies, the researcher may achieve valid results with smaller sample sizes, particularly if the target population is similar demographically. If this is not the case, i.e. if the population is heterogeneous as a result of characteristics such as socioeconomic background or age, then larger sample sizes may be necessary. In this study smaller sample sizes may be the outcome depending on the number of participating schools or if a low sample size is enough to satisfy theoretical saturation. Consequently, in order to achieve validity of results, it is necessary to employ methodological triangulation and 'theoretical saturation' (Glaser & Strauss, 1967). In this study further triangulation will be achieved by checking findings with participants, i.e. taking data back into the field, presenting it to participants, with resulting corroboration of initial data or yielding of fresh data. It is useful to bear in mind the scope of this study and its data collection methods. The data produced by interviews, for example, may be linked to necessary sample sizes required. Semi-structured interviews may yield little data whereas use of more unstructured interviews, as intended in this study, may produce richer data and consequently require smaller sample sizes (Wilson, 2009, p. 65). Charmaz (2006) points out that care needs to be taken when considering sampling in grounded theory. A distinction should be drawn between qualitative and quantitative researchers' accepted definitions of sampling, e.g. that it is representative of population, and the notion of theoretical sampling in grounded theory methodology. She states (2006, p. 109) that 'initial sampling in grounded theory is where you start, whereas theoretical sampling directs you where to go'. Glaser (1998) and Stern (1994) cited in Charmaz (2006) question the need to attend to the amount of data generated from the initial sample. This is because grounded theorists aim to develop categories related to particular concepts and thus, in effect, issues such as small sample sizes have less bearing on the features of these categories and possible relationships between them. When theoretical sampling is adhered to

rigorously to the extent that we achieve theoretical saturation, i.e. when features, understanding and analysis of categories yield nothing new, then we have achieved our aims and this can be accomplished irrespective of sample size with regard to population. In summary, after 'initial sampling' has provided the impetus for theoretical sampling, then any consideration of representation of population becomes irrelevant as we strive to ensure our emerging theories fit with our data. Success, here, can only be achieved with rigorous analysis of rich data otherwise we run the risk of identifying categories, assuming saturation of data and proclaiming theory too early.

Consideration must be given to the type of sampling strategy employed because this decides who is included in the research and who is not. For instance, a focus group interview is carried out with four children in one school. These children were selected by convenience due to ease of access. Identification of participating schools was achieved through initial chance meetings between the researcher, in the capacity of local Children's University Manager, and teachers. As a consequence of this schools made a decision on whether to participate or not so this again amounts to a convenience sample.

3.4: Data analysis

Having collected data it must be analysed in order to generate themes or categories. In so doing we work towards an understanding of the whole and of its parts. This may help to identify emerging theories. For instance, if we consider an interview that has been transcribed from an original audio-recording, the researcher needs to step back and question what is actually being said. The researcher may be said to be implementing subjective interpretation here or to be bringing predetermined thoughts from his prior experiences. This process must be tackled with an open mind and with an eye on its validity coupled with strategies to minimise this as considered in section 4.0. Creswell (2008, p. 251) suggests that this entails identifying key segments of text and assigning codes to them in the form of a word or phrase. Creswell goes on to say that the codes may represent an aspect of the setting, the participants themselves or how they think, the processes taking place, activities or actions, strategies or relationships.

In considering analysis this researcher sought to identify which of the three grounded theory designs (identified by Creswell in Section 2.5 as systematic, emerging or constructivist) he is employing in undertaking this aspect. All three designs identified ensure the necessary rigour but the constructivist design (bearing in mind this researcher's ontological and epistemological stances, prior experiences and social interactions with stakeholders) bears the closest resemblance.

Decisions have to be made on whether or not to apply line-by-line coding or to apply lean coding in which limited codes are assigned. In the case of grounded theory methodology particular to this study, the researcher applies line-by-line coding in an attempt to generate rich data upon repeated visits to the data and with subsequent memo writing. The codes assigned can then be reflected upon and, where appropriate, similar codes can be grouped together. Thus codes may be reduced or encompassed into themes or categories. There may be some layering of themes such as when minor themes are incorporated into major themes. Alternatively themes or categories may be interconnected.

This study began by seeking approval and access (ethical issues will be considered in Chapter 4) to the process to be studied, i.e. the formation of a local Children's University involving various stakeholders in the schools of that town. There was then theoretical sampling in the field in order to collect data. Creswell (2008, p. 449) suggests that interviews are commonly used to achieve this and that they might typically amount to twenty to thirty interviews.

This study then commenced with line by line open coding of data. This coding was on-going during the data collection process and provided information on which data to collect next (Creswell, 2008, p. 449) using the constant comparative method where 'data is compared with incident and incident with category'. Theoretical saturation is achieved, as seen earlier in section 2.4, when no new data are generated.

Then axial coding took place. This involved selecting a core category from those categories generated through open coding. This category was then placed at the heart of the process to become what Creswell (2008) calls the core phenomenon so that other categories relate to it. These other categories are known as 'causal conditions' (Creswell, 2008, p. 454) because they

influence this core phenomenon. They include the context, causal conditions, strategies, intervening conditions and consequences (Creswell, 2008). Axial coding in this way can be illustrated by a diagram known as a coding paradigm (Creswell, 2008, p. 454) so that relationships between causal conditions may be explored.

As a result of this the researcher moves to try to generate theory using selective coding. In this interconnections are made between categories in the coding paradigm. The theory may be presented, as Creswell (2008) suggests, as a series of propositions communicated as a narrative. This resembles the characteristic constructivist narrative postulated by Charmaz (2006).

Further to this, in discussing variants of Grounded Theory Methodology earlier in Section 2.6, it was concluded that a constructivist Grounded Theory Methodology was being followed. Clarke and Friese (2007) endorse this approach and the interpretations of Charmaz (2006) but they suggest addition or incorporation of relativist or perspectival understandings.

Data were constantly revisited and analysed by hand and through the additional use of NVivo software. Furthermore it was decided to check interconnections between categories through the use of diagrams or maps (as initially indicated in section 2.6). These may provide a more visual overview of possible links or relationships between categories. It was suggested in Section 2.6 that the use of maps or diagrams resembling those used in Adele Clarke's situational analysis would be useful but it must be stressed that the use of such maps was purely as visual aids and did not involve embarking on situational analysis. Clarke & Friese (2007) state that the former (2003, 2005) has extended Grounded Theory through developing a series of situational maps coupled with their subsequent analysis. They suggest that these maps draw on Strauss's social worlds/arenas/ organisations framework. Strauss (e.g., 1978) coined the term social worlds. In these people make commitments to certain groups. The position these people take, particularly by actions in given situations, organizes social life in these worlds. Consequently, as Clarke and Friese (2007) observe, it is the situatedness of action and interaction that is fundamental within these social worlds. They go on to state that everything or every feature within a situation 'constitutes or affects most everything else' (2007, p. 365). Bearing in mind this researcher's concerns with his position in the situation potentially

introducing bias, it is worth highlighting that situational diagrams or maps 'include adequate representations of the researchers and their positions' (Clarke and Friese, 2007, p. 366). This is another benefit of reflecting on such diagrams. Clarke and Friese point out that situational maps are not intended to be the final product of any analysis of data but that 'the major use of them is opening up the data and interrogating it in fresh ways' (2007, p.370). These maps were used as a means of further reflection on the initial interpretation of data drawn from interviews and questionnaires.

Situational analyses may be carried out by constructing three kinds of maps. These are situational maps, socialworld/arenas maps and positional maps. In this piece of research, the use of maps was solely as a focus in reflecting on the outcomes of analysis using the constructivist approach.

3.5: Trustworthiness of Theory

The effects of the researcher position and integrity will be discussed in Chapter 4 but it is important to consider authentication of theoretical propositions in more detail. This aspect is an active part of the process of Grounded Theory (Creswell, 1998). As part of the constant comparison procedure the researcher triangulated data between the information and the emerging categories (Creswell, 2008, p. 450). Participants in the process were asked to check the process by reading interview transcripts. This helped in substantiating the theory as suggested by Creswell (2008). Further to this, readers who had not taken part in the study checked interview responses.

Quantitative researchers undertake various steps to ensure the rigour of their research by establishing its validity, reliability and objectivity. It has been demonstrated in Chapter 2 that this current study was carried out using qualitative approaches and that this was through use of Grounded Theory Methodology. Reference was made to potential positivist traits that may be entrenched in some variants of Grounded Theory but in adopting a constructivist Grounded Theory Methodology, as advocated by writers such as Charmaz (2006), these elements were avoided. Indeed, as has been seen in discussion surrounding the researcher's positionality, they were consciously avoided.

There has been an effort throughout this study to ensure that it has been robust in terms of procedures and outcomes. Toma (2011) pointed out that these parallel qualitative measures are known as credibility, transferability, dependability and confirmability. These echo the work of Lincoln and Guba (1985) and Guba and Lincoln (1994). Guba and Lincoln (ibid) stated that trustworthiness comprised credibility, transferability, dependability and confirmability. Toma (2011) suggests that researchers reflect on the literature regarding rigour in qualitative research. Having done so it seems to be plausible that, having considered a range of suggested parallel standards for demonstrating rigour in research such as those above (and presented in Table 1 below) such measures are by no means absolute and that the researcher must develop robust standards to emphasise rigour in their own particular research context. It must be stressed that such a mapping cannot be entirely literal because quantitative and qualitative research are concerned with different things. For instance the former may be concerned with ‘what?’ and the latter is about finding out ‘how’ (Toma, 2011). Further to this it must be remembered that in qualitative research data is collected and analysed by a particular researcher following interaction with participants at a given time and in a given place. Quantitative research follows strict procedures with a clear divide between researcher and participant and Toma (ibid.) argues that the same results would be achieved no matter who conducts the research.

Table 1: Mapping positivist criteria against qualitative standards in order to demonstrate rigour in research (after Lincoln and Guba, 1985)

Positivist Elements	Qualitative Elements
Internal Validity	Credibility
External Validity	Transferability
Reliability	Dependability
Objectivity	Confirmability

In short, it must be stated that this study, based on Grounded Theory Methodology, is subjective in the post-positivist sense and consequently cannot be considered to have perfect, measurable results. Further to this, the numerous variants of Grounded Theory Methodology are imperfect. They are simply the tools or the 'means to an end'.

This researcher attempted to adhere to these qualitative standards that were considered as interpretations of the accepted positivist elements concerning rigour. They were reflected upon under the notions of trustworthiness and authenticity. In addition, it must be remembered that a constructivist variant of Grounded Theory Methodology had been adopted. This introduced a further consideration relating to interpretation. Toma (ibid.) states that conventional constructivists consider goodness or quality elements as trustworthiness and authenticity while others concentrate on interpretation. In the case of this study it was felt that it was impossible to separate them.

Toma (ibid. p. 267) states that:

Findings must relate to some reality (authenticity) and to how others construct their world (trustworthiness) such that a reader would be confident in acting on the conclusions, implications and recommendations they yield.

The case for incorporation of an interpretive stance was argued by Altheide and Johnson (1994) in what they called interpretive validity. This aspect resonates with what the researcher tried to adhere to during this current study of the local Children's University and Altheide and Johnson's (ibid.) thoughts are represented thus:

- Enlighten those who read the report
- Draw on multiple voices and tacit knowledge
- Consider researcher positionality
- Relate findings in rich depth so the reader can relate to the context closely

Denzin and Lincoln (1994) provide four categories that summarise rigour in qualitative research. These are represented below in Table 2:

Table 2: Rigour in qualitative research (after Denzin and Lincoln, 1994)

Category	Description
Positivism	Incorporating validity, reliability, generalizability, objectivity
Post-positivism	Positivist traits reframed to a qualitative fit (as seen in the mapping in Table 1 above) and in a constructivist sense as trustworthiness and authenticity.
Postmodernism	Concludes that no criteria are appropriate in assessing qualitative research
Poststructuralism	Advocates entirely new criteria rooted in subjectivity and feeling

The study concerning the formation of this local Children’s University has tried to draw on all four categories as recommended by Creswell (1998) in terms of matching the need for rigour to this unique situation. Creswell (ibid.) uses the term verification rather than validity in an effort to emphasise factors such as time in the field, use of rich description and affinity between researcher and participants. These traits have been followed in the course of this study and echo what was said above in terms of identifying and integrating procedures that are fit for purpose.

Considering the various features in turn will help to underline the rigour of this current study and this is highlighted in Table 3 below:

Table 3: Exemplification of rigour in this study

Feature	Exemplification
Credibility	This aspect was addressed by presenting stakeholders with findings of aspects of the study and with their acceptance and agreement with those findings.
	This thesis has endeavoured to convey rich description

Transferability	throughout so that its value can be assessed in terms of applicability in other settings or contexts.
Dependability	Steps along the research journey, particularly in relation to data collection and analysis, were progressively refined as fresh ideas emerged or were constructed. Changes over time were noted and reported. Snapshot inferences or conclusions were avoided.
Confirmability	Researcher positionality was considered in terms of bias and subjectivity. Interpretation of data such as stakeholders' statements was checked for accuracy by revisiting the field.

Creswell (2009) identifies eight strategies to draw from in order to check accuracy and authenticity and thus its credibility. These are:

- **triangulation of data sources** – a variety of stakeholders were interviewed to ascertain their perspectives and various reports, emails and opportunistic verbal communication were consulted
- **member checking** was used whereby aspects of the final report were presented to stakeholders for accuracy and also agreement on interpretation of data
- **use of rich, thick description** in recounting the research journey in the hope that interested parties could 'step into the context' and develop a feel for the setting
- **clarification of researcher positionality** was of particular concern to the researcher, with regard to potential bias, and will be conveyed in Chapter 4
- **inclusion of negative or discrepant information** has been achieved through consideration of gathered data that did not 'fit' a given theme or category (for example in reporting on parents who bucked the trend and did not want aspirations raising)
- **spend a prolonged time in the field** – the researcher spent a long time engaging with the field by interviewing, observing and by engaging in practical teaching that will have ensured empathy and accuracy of findings whilst developing trust and credibility
- **use of peer debriefing** was utilised by sharing findings with immediate colleagues and with colleagues in other departments sometimes employed in different disciplines

- **use of an external auditor** to view the whole project was more difficult to achieve within the time constraints of the study but many aspects (for example accuracy of transcriptions or analytical procedures) have been examined by professionals (for example the representative from the professional subject association, an NVivo software trainer or senior education advisers)

The researcher wanted to test the theoretical model through more deliberate intervention by revisiting the field near the end of the study. There was a desire to assess the trustworthiness of the outcomes. To achieve this, the researcher presented data and analyses to various stakeholders and to individuals who had not been a part of the study. The value of this has largely been outlined above, especially with reference to Creswell's (2009) and Guba and Lincoln's (1994) ideas regarding rigour in terms of trustworthiness and authenticity.

It also seems prudent here to discuss three types of validity, synonymous with trustworthiness in a qualitative sense. These are descriptive, interpretive and theoretical validity as defined by Maxwell (1996). Descriptive validity describes the factual accuracy of an account as reported by the researcher. The recount in the case of this study was as rich as possible at each stage be that identification of methodology, data collection and analysis, generation of a theoretical model or, indeed consideration of trustworthiness. This was one reason why stakeholders and other individuals were consulted over content late in the study in order to verify accuracy. Interpretive validity was touched upon earlier in this section and refers to the accuracy with which the researcher interprets and portrays stakeholders' contributions during data collection and analysis. Again this was addressed through what Creswell (2009) called member checking, meaning consultation with stakeholders over inferences drawn from data. The third type, theoretical validity, describes the extent to which the theoretical model, derived by the researcher, fits the data. This was achieved by member checking, peer debriefing and by use of external audit.

This research project achieved credibility by describing the extensive consideration given to its design and to how it has been described in this thesis. The researcher attempted to demonstrate theoretical sensitivity and to ensure theoretical saturation. There is much use of the stakeholders' own words throughout in an attempt to provide the reader with a feel for the context rather

than presenting the paraphrased offerings of the researcher. Data was gathered from a variety of stakeholders and from appropriate documentation in order to secure triangulation. Data collection was achieved both formally and informally. There has also been transparency in the efforts made to analyse data appropriately through examples of diagrams and NVivo models. Importantly, it was ensured that the theory was grounded in data.

3.6: Application of methodology in the field

There has been discussion of the early stages of data collection and analysis using methodological approaches outlined in Chapter 2 using methods outlined earlier in this Chapter. There came a point in the research process where the researcher found it necessary to gain a clearer picture of the types of stakeholder involved in the formation of the Children's University and to begin to understand the complex relationships between these stakeholders. Care was also taken, at this point, to avoid completing the data collection and analysis processes prematurely. This is a common or casually executed practice and Partington (2002) highlights the need to continue with the data collection and analysis process and even to consider identifying negative cases of category features in the data.

Clarification of these possible complex stakeholder relationships was achieved using, initially very simple, maps suggested by Adele Clarke (2005) in her Situational Analysis approach. As evidenced later in the current chapter, it was anticipated that such maps would be useful in making actions and interactions of stakeholders more evident. They may also cater for those researchers who benefit from interrogation of more visual or pictorial models. Use of such maps and resultant situational analysis both relies on and extends Grounded Theory (Clarke and Friese, 2007). Furthermore, of particular relevance to this consideration of the needs of human and non-human stakeholders in the formation of the local Children's University is the notion of the meso-social world arising from Strauss's social worlds and arenas framework (e.g. 1993). He suggested that social life can be viewed in a middle range (meso-social) between features of the individual (micro-social) and society as a whole (macro-social). In this study of a local Children's University, this meso-social range includes the commitments by the people within the various groups, e.g. schools, University departments or the University as a whole. There is also action at a

micro-social level, i.e. the actions and interactions of individual stakeholders in the course of addressing their needs and accomplishing their motives. With reference to the groups, Strauss termed them social worlds. There may be bi-lateral commitment among human and non-human stakeholders at micro and meso levels. This commitment is sustained through physical action, argument, debate, psychological manipulation and negotiation. It has become apparent in the course of this research that such action and interaction is in a state of constant flux as stakeholders' circumstances or motives change through changes in internal and external drivers. Use of situational maps may allow such changes and interrelationships to be traced.

In addition, the use of Strauss and Corbin's Conditional/Consequential Matrix approach was considered. Clarke and Friese (2007) claim that Glaser and Strauss did not emphasise context or situatedness in their early work but go on to suggest that Strauss did so later and in his work with Corbin focusing on Conditional/Consequential Matrices. Clarke and Friese (2007) suggest that Strauss and Corbin's intention, in promoting these matrices as analytic devices, was that the approach would encourage the researcher to consider the contexts of their research in-depth. These contexts might include organisational or community conditions. In the study of the local Children's University these conditions may include the level of support offered to the CU Manager by the Head of Department or they may be the level of training available to teachers or their preferred pedagogy. Drifting towards a more macro-social level, the conditions may be affected by levels of funding from National Government.

Clarke intimates (2005, p. 65-73) that there is no such thing as context when considering these issues. The context helps us to understand the circumstances of a setting or event. The researcher would agree with Clarke to the extent that perhaps the word context does not place enough emphasis on what is actually happening in a given situation with some indication of the factors culminating in a given situation. It seemed useful, therefore, that the conditions of the situation should be included in an analysis of the situation. Clarke and Friese (2007, p. 364) conclude that 'the conditions of the situation are *in* the situation'. It is the situatedness of action and interaction (Clarke & Friese, 2007, p. 364) that are important. Situational analysis emphasises this whereas consideration of context may suggest examination of peripheral

elements when scrutiny of key conditions may be overlooked. Nevertheless, Strauss and Corbin (1998, p. 181-199) in describing the Conditional/Consequential Matrix, even though they use the word context, do place importance on consideration of macro and micro conditions, their interaction, the paths that they take and the consequences. Strauss and Corbin (1998, p. 182) go as far as saying that 'locating a phenomenon in context means more to us than simply depicting a situation descriptively'. They suggest that it should explore the relationships between events and phenomena. More importantly they go as far as stating that 'Events that occur 'out there' are not just interesting background material. When they emerge from the data as relevant, they should be brought into the analysis. Sorting all this out is where the matrix is helpful.' (Strauss & Corbin, 2007, p. 183).

The researcher considers the use of such maps as an opportunity to reflect on researcher- participant positionality and its bearing on social interactions during the interview process, for example during interviews, as discussed in Section 4.1.

Figure 1 shows the basic template for a conditional/consequential matrix (taken from Strauss & Corbin, 2007, p. 184). The dark lines within the diagram represent the evolving interactions. The spaces in between these lines identify the sources of the conditions or consequences, e.g. the individual, the institutional or the community, which embody the structure or context. The arrows signify interactions between the conditions and the process. It is worth defining the terms condition, consequence, process and interaction. It is also worth drawing attention to the strengths and weaknesses of the matrix in terms of its design and how it may be interpreted. Strauss and Corbin (2007, p. 1192) point out that 'one of the limitations of the diagram is that the flow appears linear.' This is not the case. Strauss and Corbin liken the actual situation to that found in a kaleidoscope where every turn of the instrument 'realigns the little pieces of coloured glass (or plastic) to form a new picture.' (2007, p. 192). The main purpose of using such a matrix is that it helps the researcher to not only describe the conditions operating in a situation but to then go on to make connections between those conditions and the events that follow.

Thus, the matrix is a 'conceptual guide' (Strauss and Corbin, 2007, p. 193). It helps the researcher to explore the broader conditions within analysis. For

instance, it has been stated earlier that individual stakeholders bring their personal motivations and beliefs to the setting.

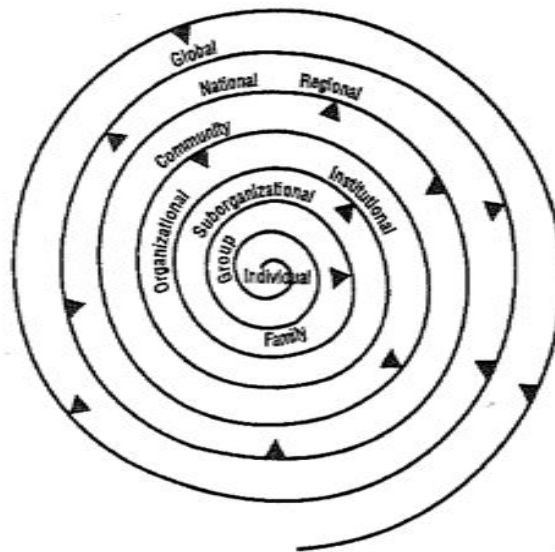


Figure 1: The conditional/consequential matrix

Strauss and Corbin (2007, p. 193) point out that these individuals may also bring with them the beliefs 'of a larger culture at the community, regional and national levels.' Political decisions made at a national level may have an impact at an individual level. There is interplay between macro and micro levels. These broader issues are just as important to this study as those relating to individuals. Such consideration can help to inform the direction to be taken during analysis and subsequent data collection. This is aided by the fact that questions being raised are relational ones where decisions have to be made about which paths to follow.

The researcher considers Clarke's Situational Analysis using mapping and Strauss and Corbin's Conditional/Consequential Matrix to be similar in terms of their underlying principles and intent. It appears that they may differ in terms of the interpretation of associated language and terms and in the clarity and accessibility of their respective diagrams.

3.6.1: The first two maps derived following Clarke's guidance

As discussed above, Adele Clarke (2003, 2005, 2007) proposed the use of situational analysis as part of a Grounded Theory Methodology. Her proposals were based on the use of maps and two early adaptations of these, derived from this current study of a Children's University can be seen in Figures 2 (a

'messy' map) and 3 (a situational map). The researcher is present in these diagrams in the role of tutor but is also recognised as the manager of the local Children's University. It should be remembered that "university" refers to the host Higher Education Institution and the local Children's University is referred to in those terms or by use of CU. The researcher felt that an interpretation and wholesale adoption of Clarke's methodology was not appropriate or beneficial in terms of a full analysis because it was too complex and did not fit with this researcher's epistemological and ontological stance. With this in mind the constructivist variant akin to Charmaz was favoured. The maps presented did prompt the researcher to undertake a more complete consideration of all of the stakeholders involved in the formation of the local Children's University and the possible relationships between them.



Figure 2: 'messy' map 1 – Stakeholders in the local Children's University

Organisational/Institutional Elements

Dept. for Children, Schools and Families

Classrooms

Halls

Schools

Statutory and Non-Statutory frameworks

University

Spatial/Temporal Elements

Classrooms

Halls

Schools

Learning Environment

Social Deprivation

Static Demography

Human Elements (individual/collective)

Headteacher 1

Teacher 1a

Headteacher 2

Teacher 2a

Teacher 3a

Year 1 students

Governors

Parents

Community

Children

University Tutor 1 (researcher/local CU Manager)

Learning Destination Staff

University staff

Popular and Other

Discourses

Teacher-centred vs. Child-centred ethos

Social deprivation

Community aspiration

Behaviour in schools

Outreach in universities

Discursive Constructions of Human Actors

Impact on behaviour

Attitudes to learning and motivation

Enjoyment

Raising aspirations

Raising self-esteem

Impact of learning environment

Substitution for normal practice

Impact on parents and community

Students as role models

Desire for University link

Modelling expert/exciting pedagogy

Figure 3: Situational Map 1 – Stakeholders in the local Children’s University - Situational Map; 4th September 2009 (after Clarke, 2005)

3.7: Interrogation of data using NVivo 10

In order to revisit and to adopt a fresh approach to data analysis the researcher elected to use a piece of computer software called NVivo. It is an example of Computer Assisted Qualitative Data Analysis Software (CAQDAS). There is a range of such software and many have been developed over many years. According to Gibbs (2002) one of the first was NUD•IST software and NVivo is the latest manifestation derived from the principles of the former software. The full name of the software is NUD•IST Vivo and NVivo is simply a contraction of that (Gibbs, 2002).

This section will describe how the researcher explored data using the latest version of the software, NVivo 10.

3.7.1: The benefits of using Nvivo 10 software

Gibbs (2002, p. 165) pointed out that ‘the design of NVivo was strongly influenced by grounded theory and therefore the program gives good support for the method’. The program possesses features that are commensurate with the various types of coding undertaken by the Grounded Theory researcher. For instance, there was an opportunity to explore data ‘line by line’ using open coding that allowed for identification of emerged categories that could be assigned to ‘nodes’. Further to this, possible relationships between the categories or ‘nodes’ could be examined during what was effectively axial coding. Finally, there were tools available within the software to support the isolation of a central phenomenon or of central phenomena in the process known as selective coding.

As seen in Section 3.6 the researcher found that constructing diagrams and charts aided exploration of data at the axial coding stage. The tools within NVivo permitted similar manipulation of data at this stage and the following selective coding stage. The researcher found that it was more convenient using the NVivo program to visualise data in such a way because it allowed for easier revisiting of data. There were opportunities to restructure diagrams and consequently ideas. This was usually achieved more easily than with pen and paper methods with the added benefit of being able to browse data linked to a particular feature at the click of the mouse.

3.7.2: Potential drawbacks of using Nvivo 10 software

It is worth remembering, crucially, that all visualisations constructed in this way are only as sound as the quality of the coding and emerged categories or 'nodes' from which they are derived (Gibbs, 2002).

However, as Bazeley and Richards (2000, p. 3) point out:

But many [researchers] learn better by employing the tools as they need them. Qualitative software is often best learned that way, since qualitative projects normally unfold; as more data are discovered or created, more ideas are formed, more hunches and theories constructed and tested, and more inquiries built on those first ideas.

3.8: Summary

This chapter has discussed issues related to selection of data collection methods and has described the process of data analysis. The effects of the researcher's position in this study could have a bearing on the trustworthiness of the data collected. Steps must be taken to minimise these effects. This is discussed in the next chapter. In addition, throughout the whole process of designing and executing the research, great emphasis must be placed on the need to apply strict ethical procedures in order to safeguard participants and any relevant organisations. These ethical procedures will be considered in the next chapter.

Chapter 4: Ethical Issues and consideration of the researcher's position

The previous chapter explored aspects of data collection and analysis. Important considerations regarding data collection are ethical issues with particular recognition of the element of dealing with research involving children and also the potential impact of researcher positionality. These features are discussed below.

4.1: The position of the researcher in respect of relationships with stakeholders and the overall management of the formation of the local Children's University.

The researcher, having witnessed the benefits to children as a result of their participation in a Children's University earlier in his career, wanted to manage a Children's University in addition to his role as a Lecturer in Primary Education. The researcher approached his Head of Department at the University in order to negotiate the possibility of managing this initiative. The reason put forward by the researcher was that it might benefit teacher education students by providing them with additional experience in schools in the course of supporting the researcher. The only condition stipulated by the Head of Department was that such participation by the researcher should not result in a detrimental impact on his main duties in fulfilling his terms of employment. There are additional factors that may benefit universities and similar institutions by undertaking such activity with the wider community. These can be gathered together under the general term of Outreach. The Concise Oxford Dictionary (1999) defines outreach as an organisation's involvement with or influence in the community. The University of Massachusetts (2008) states that outreach work must be of benefit to the university and to the community through academic expertise encompassing teaching, research and service. These statements may be central to the question 'What are the needs of stakeholders in the formation of a Children's University?' It is particularly the case when that local Children's University is being instigated by an academic, in this case also the researcher, working for a University situated in the midst of the community. The initiative may be of benefit to the University in terms of related research work undertaken, by strengthening its relationship with partner schools (i.e. schools used to train its students) and by raising its profile in a positive way. These aspects may be apparent in research outcomes as many features related to the impact of this

outreach on the community. The latter may include students, children, parents and schools.

The researcher had a dual role. In addition to studying aspects of the local Children's University during its formation he was also the manager of the local Children's University and as such had a vested interest in ensuring that this CU provided a sustainable, quality service to, principally, the children in participating schools. This aspect needed to be borne in mind during both data collection and analysis (see Section 3.2 earlier and in Section 4.2 in more detail). It must be remembered that it is the needs of stakeholders that are being identified and that, as such, those features could be explored whether the CU had been successful or not. Furthermore, data collected and analysed was subject to scrutiny with an 'open mind' and as a result theoretical saturation was achieved through constant comparison and revisiting of data to check inferences and analysis.

There are other key stakeholders involved including teachers and teacher education students. These stakeholders participated voluntarily because, presumably, they felt that doing so would meet their needs and possibly, especially in the case of the teachers, the needs of participating children. The researcher needed to be aware of his power, in ethical terms, in forging such relationships.

Teachers took part voluntarily and did so as a result of recommendations by peers in other schools or as a result of an explanation of the intentions of the CU by the researcher in his capacity as CU Manager. In considering the ethics involved in dealings with the teachers it must be stated that there were no other means of coercing teacher participation but nevertheless an awareness of potential misconceptions from the teachers' perspective were reflected on by the researcher. For instance it could be said that teachers may be tempted to take part because they thought the Higher Education Institution (HEI) might as a result, allocate a 'good' student on placement their school. In this case it must be remembered that, as organisations at the outset, the local CU and the HEI are distinctly separate. Further to this the CU Manager had no authority or influence in deciding where students were placed for their school experiences.

The researcher may be said to exert even more of a powerful influence over the teacher education students as a result of his close working relationship with them as their tutor. Students take part in the Children's University as mentors to the participating children and the former do so voluntarily. The researcher felt that students would take part because they would welcome the opportunity to broaden their practical experience in schools. In reflecting on other possible motives it could be construed that students may feel that, in electing not to participate, they may gain 'black marks' that may impact on their formal performance during their degree course. In considering this, the researcher, in his capacity as tutor, stressed the voluntary nature of participation and that taking part would provide additional experience in schools but that such experience would not be assessed or attract marks. In addition it should be borne in mind that the researcher as tutor was responsible for only a small part of the students' course and that, in any event, any marking of student work was anonymous and subject to second-marking and moderation.

4.2: The position of the researcher with regard to data collection

Having decided to follow grounded theory methods one of the writer's main concerns was with minimising the effects of the researcher's position in data collection. Central to this was the fact that the writer was to play an active role in securing participants. Hammersley and Atkinson (1983, p. 14) state that naturalistic approaches to the collection of uncontaminated data is that it is achieved as a result of the researcher becoming a 'neutral vessel of cultural experience.' Moreover, they stress the reflexive nature of the field and point out that we cannot escape its social world or avoid relying on our common-sense knowledge or avoid having an effect on the phenomena that we study.

The writer introduced participants to the notion of Children's University (CU) participation. Furthermore, the writer would be involved in delivering initial teaching and learning sessions and had an obvious desire for these sessions to be successful in the hope that these learning experiences would excite and engage participants and be of educational value. It was hoped, in turn, that such an experience would provide sufficient initial impact to promote a sustainable local CU. Consequently, other participating adults such as teachers and student mentors would possibly empathise with this and this may colour their responses or actions during data collection. Thus there is a fine balance between

impartiality and sensitivity. These aspects must be always at the forefront of the researcher's mind. The researcher's mind will be full of preconceived notions that may, subconsciously or not, possibly influence the observations he makes and the questions he asks at interview. The researcher must admit to these possibilities and try to minimize the effect that they may have on data collected and, indeed on any inferences drawn from that data. This situation may arise as a result of the 'selective' behaviours of the researcher in terms of how observations are made (e.g. seeing what we want to see), what we choose to record in the field and what we choose to remember or infer when we revisit or update field notes. The researcher must try to minimise the influence of such factors. For instance when taking notes they should be made as quickly after the event as possible and without reflection and when those notes are reread or analysed the context should be borne in mind. As Strauss and Corbin (1998, p.35) state it is important, but difficult to maintain in such an ethnographic scenario, that the researcher distances himself from research materials whilst at the same time treating them fairly in trying to keep the participant voice independent from that of the researcher. In the midst of this, the researcher needs to be sensitive to cues offered by the data while at the same time trying to retain impartiality in collection or interpretation of data.

Hammersley and Atkinson (1983, p. 15) describe the use of the 'structured conversation' in gathering data and develop this (1983, p. 110) by proposing the use of 'non-directive interviewing' at length. Here, the interviewee is allowed to talk at length in his or her own terms. Hammersley and Atkinson suggest that the aim of such a method is to minimise the effect of the researcher. It allows the participant to maximise the statement of their perspective. It may minimise the effect of the presence of the researcher but it does not remove it entirely. Pole and Morrison (2003) state that the authenticity of such naturalistic approaches is dependent on the ability of the researcher to stay close to the stories told by the participants. They go on to ask if it is possible for researchers to write interviewees words as if the former had not been there. Hammersley and Atkinson (1995) suggest that such a situation is not possible. They argue (1995, p. 19) that 'once we abandon the idea of that the social character of research can be standardised out' with researcher as 'fly on the wall' then the role of the researcher as active participant becomes clear. There is always an underlying problem of reactivity or the effect of the presence of audience. Data

must be interpreted with the context in mind. Other methods may be used to supplement data collected. For instance the effect of audience may be minimised if the researcher makes observations or notes comments made by participants while the latter are engrossed in the processes of the natural setting rather than paying heed to the researcher. Hammersley and Atkinson (2001, p. 191) concur and say that other audiences in the setting are much more powerful and significant. What must also be borne in mind is that, as Pole and Morrison (2003, p. 28) attest, we 'change ourselves' as a result of being in the setting. This must be considered when analysing data and adjustments made accordingly.

Hammersley and Atkinson (2001, p. 113) endorse the approach to interviewing undertaken by the researcher. They say that interviews, like all social interactions, are 'structured by both researcher and informant.' They highlight the distinction between standardised and reflexive interviewing in that, as in the case of this study, questions were not specifically listed beforehand but a list of issues to be covered was drawn up. The researcher believes that emphasis on a non-directive approach, especially in the initial interviews, reduces the possibility of asking leading questions. It also allows the interviewee to speak from experience, to be at ease with the situation and offer comment freely. This may improve the authenticity of their responses. This open-ended approach may cast the interviewer in a passive role but care must be taken by the researcher to be an 'active listener' (Hammersley and Atkinson, 2001, p. 113) making constant reference to the research issues. There is a strong case for more directive questioning in order to clarify points in the initial interviews. More importantly, this type of questioning will be more apparent and useful in later interviews as the researcher seeks to test these initial hypotheses. Furthermore, they may be present in questions derived in consultation with participants, for example teachers and headteachers. Questions devised by participants will be relevant to them. This will be fruitful in two ways. Firstly, the answers to those questions will provide useful data when put to other participants. In addition, the questions themselves are valuable data and will give a useful insight into participants' thinking. Furthermore, it introduces a perspective other than that of the researcher and is another step taken to minimise the bearing that he may have on the trustworthiness of data. In fact, although there cannot be true

research collaboration in such a researcher-participant relationship, there may be close consultation between the researcher and participant through which they can share their backgrounds and experiences. Rhoads (1997, p. 480) says that 'The point of discussing...positionality is that everyone brings their own histories, social standing and cultural backgrounds with them to all endeavours – including the process of researching.' Such a situation fosters an air of trust and credibility. Awareness of, and reflection on, one's positionality is crucial for both the Grounded Theory researcher and the research process and is recognised by several theorists (Barnes, 1996; Charmaz, 2006; Clarke, 2005; Strauss and Corbin, 1998). This awareness may translate itself into the types of questions or issues considered during interview, in the syntax of words used and the use verbal and non-verbal cues. Reflection can take place during interviews and may serve to steer the direction of the conversation. Of equal importance is the self-reflection that takes place during memo writing. This provides the researcher with opportunities to confront positionality and how it might colour inferences drawn from data. As Richardson (1998) suggests, it is a time for the researcher to find out about themselves and where knowledge of self and of participant are intertwined.

Information on, or awareness of, positionality raised by reflection on memos may be supplemented by use of situational maps as discussed in section 3.4. These maps can provide information on how different stakeholders may influence each other, or not, as a result of factors such as social background, hierarchical power or the ethical position of the researcher. This latter issue was considered in Section 4.1.

It will also be useful to test interviewees' previous responses by revisiting them in subsequent interviews. A useful approach will be to feed in leading questions at this point, even to the extent of steering the interviewee in the opposite direction (Hammersley and Atkinson, 2001). This is linked to the theoretical sampling (Glaser and Strauss, 1967) outlined earlier in section 3.3. In essence, the researcher selects who is to be interviewed and at what point in the research the interview takes place. Reactivity cannot be entirely eliminated even if a complete participant role is adopted. The crucial message here is for the researcher to be aware of positionality when reflecting on responses.

Strauss and Corbin (1998, p. 43-46) suggest several procedures aimed at minimising such issues and thus maintaining trustworthiness in the midst of sensitivity. They highlight the notion of thinking comparatively, i.e. comparing incident to incident in the data. Alternatively we may look for comparisons in literature or previously experienced phenomena. Other methods that may be used to maintain distance is to investigate different viewpoints of participants or collect data using a variety of techniques such as interviewing, observation or questionnaire. This is essentially triangulation of data. This is not necessarily triangulation as a means of examining the trustworthiness of data but is a way of gaining meaning from data. It also pays to remain sceptical in this regard and to frequently revisit and interrogate data over the course of the investigation. This may mean going so far as asking respondents if their perceptions agree with some of the data currently accumulated (Strauss and Corbin: 1998, p. 45). This may address or remedy the fact that some respondents 'give the researcher what they want'. It is also prudent to adhere to grounded theory procedures, alternating analysis and data collection, as this helps to eliminate worthless data and ensure validation.

Seeking theoretical saturation and facilitating participants' revisiting of data collected previously will help to ensure reliability.

4.3: Ethical issues

In gathering research data the benefits of the research outcomes must be balanced against the rights of participants and any potential negative impact on those rights. In addition, in pursuing the necessary procedures aimed at eliminating any negative impact, it may be borne in mind that such situations will be exacerbated with any move from abstract to concrete situations (Cohen, Manion, & Morrison, 2007). Such ethical issues may originate in various features such as the nature of the participants, the context of the researched field or the very methods employed to generate data.

Initial consideration must be given to a variety of factors such as gaining informed consent, gaining access to the research setting, ethical problems with methods and adherence to adopted ethical frameworks.

Gaining access to institutions participating in the Children's University could pose problems. The researcher had to gain credibility as a researcher and

practitioner. In ethnographic terms the researcher spends a lot of time in the setting assuming the role of participant observer. He gains credibility by demonstrating competence as a teaching practitioner and by being able to use the language of the setting. In addition, in many cases, a service was being provided so goodwill was established. The writer had to maintain awareness of his position as a researcher in such situations in order to ensure the trustworthiness of data collected.

Informed consent involves providing participants with information about the nature of the research, its aims and research methods. Diener and Crandall (1978) suggest that informed consent is the process by which participants choose whether to take part in an investigation having been informed of relevant facts. Cohen, Manion, & Morrison (2007) suggest that this definition involves four elements. These are competence, voluntarism, full information and comprehension. In essence the potential participant should be mature enough to be capable of making necessary responsible decisions. The potential participants should accept any associated risks in volunteering to take part after considering relevant available information and developing an understanding of the aims of the research. They should also recognise the value of the research in terms of potential benefits to be derived. They should be able to participate or withdraw voluntarily. They should be aware that they, and their institutions, will be anonymous and confidentiality will be applied.

One major issue emanating from a consideration of ethical issues in relation to the use of Grounded Theory Methodology is that participants, in the interviews, can only be provided with a limited amount of information about the aims of the research. They will be informed of intentions to identify the needs of stakeholders in the formation of a Children's University. However, should they be informed about the nature of any emerging theories, for example during the interview process? This may occur in the form of transparent statements of key aspects. Conversely, it may be intimated through comments or questions posed by the researcher during the interview process. There are times later in the research process when interviewees may be confronted by some of the current outcomes in order to check initial hypotheses. At other times, later in the process, participants may be asked to suggest the actual questions that may be asked of other interviewees. In such situations the researcher-respondent

positionality becomes closely intertwined. Care should be taken here because a situation may arise where interviewer and interviewee may construct differing interpretations of each other's views, responses, inferences or conclusions. The Constant Comparison approach leading towards theoretical saturation accounts for any such possibility of false data.

Consideration of the research needs to be addressed systematically. Wilson (2009, p. 66) identifies the 'grid' approach developed by Seedhouse (1998). The grid is comprised of layers. The external or ecological layer is concerned with the wishes of people external to the institution and with the culture of that institution. In this study, this will specifically be stakeholders outside of specific institutions such as teacher education students or parents. It may also, ultimately, concern the wishes or motives of the English Government's education policy makers or Training and Development Agency employees, depending on the direction taken by the research and its potential outcomes. There may be consideration given to laws, systems, conventions and policies.

The consequential layer asks us to think about the impact the research may have on participants or the impact resultant actions, imposed as a result of the research, may have on the future of their institutions.

The deontological layer comprises reflection on the nature of methods applied and the care taken in implementing them. There should be avoidance of doing wrong. There is a chance, in applying Grounded Theory Methodology, that unexpected controversial or sensitive issues may be uncovered. The researcher must have strategies to handle these issues and to assess the balance between their detrimental or beneficial effects on both the participants and those identified in the ecological layer.

Lastly, the individual layer is concerned with relational ethics. It focuses on relationships at the heart of the research. This is essentially, in the case of this research, about the trust between researcher and participants. The researcher needs to show a common respect to all participants whether they are, for instance, parents, teachers or children. The responsibility afforded to them should be consistent and should be supported by methods applied and the validity and reliability of those methods.

Olesen (2007) says that Grounded Theory is an approach to the analysis of data. She goes on to assert that the classic Grounded Theory research texts did not make reference to ethical issues partly because of the nature of the approach but also because of the fact that such texts were published at a time when awareness of ethical questions was less significant. Researchers made assumptions that such matters would be addressed.

4.3.1 Gaining the consent of adult participants

Nevertheless, whilst recognising the sentiments of the previous section and in particular the final paragraph, this study will adhere to the ethical guidelines as laid down by the Faculty of Education Committee (see Appendix C on p. 284). These guidelines required the researcher to submit a proposal to the Ethics Committee outlining the purposes of the research and considering the position of all participants. Participants were required to give informed consent (see Appendix D on p. 288) to their involvement in the research. They were told that they would remain anonymous, that processes would be confidential and that they had the right to withdraw at any time without recompense. Many ethical issues can be overcome if the researcher reflects on the aims of the research and its methods. In doing so such issues may be anticipated and may be overcome. Firstly the aims of the research should be considered and value judgements made as to the potential benefits that may be derived from it. This will involve dissection of the research question and assessment of its worth. Participants should not suffer as a result of research methods or of the outcomes of the research. For instance they may not be asked questions that make them feel uncomfortable to answer because of subsequent negative repercussions in the setting. Their future potential within the institution should not be affected, i.e. they should not be disempowered. There should be reciprocity in terms of researcher and participants sharing mutual benefit from the research. Questioning techniques are also critical. For instance, there may be misleading or leading questions. They may confuse, distress or make the interviewee feel uncomfortable. This may be to provoke a response but the ethical implications of this must be assessed.

Respondents should be consulted about data. This serves the purpose of adding to the trustworthiness of the data but may also generate additional data.

4.3.2 Gaining the consent of minors

Children are important stakeholders within the local CU because the whole initiative is aimed at developing their learning. Informed consent was gained through the school. Parents were informed of the aims of the study and of the right to withdraw without subsequent negative repercussions to anyone. Anonymity and confidentiality would be respected. Informed consent was therefore gained and in addition the school, through its teachers, acted in loco parentis. Children to be interviewed were selected by their teacher. It was important, even bearing in mind that informed consent had been gained from parents, that the children had given assent (West, 2010). This stresses the importance of treating the children with dignity and respect and it also models the value of respect (West, 2010) and indicates to the children the value being placed on their views. Children were interviewed as part of a group in order to help them feel more at ease and the teacher was present throughout this process in order for children to feel even more comfortable. Presence of a known adult or carer was recognised by Grieg et al (2007) as a valuable aid in achieving integrity and authenticity in children's ability to interpret and respond to questions.

4.3.3: Additional ethical considerations regarding children

Bearing in mind the above issues it was the intention to interview only two groups of children. Further to this the views of children would be voiced through interviews with their teachers. This reduces the ethical issues relating to children and data is authentic in because the children's teachers have an accurate perception of children's thinking.

West (2010) recognised the need to consider children's cognitive and linguistic development when involving them in research. West's research (ibid.) discusses these features by considering the work of social constructivists such as Lev Vygotsky (1978) and its relationship with symbolic interactionism (closely linked with Grounded Theory Methodology) in that meaning arises from social interaction.

With this in mind the questioning employed at interview would be important with respect to the researcher's relationship with the children, particularly regarding hierarchical power, and the type of questions and the language used.

Greig et al (2007) described the types of questions that may be used when interviewing children. In particular, especially considering the intent of this current study of a local Children's University, they identified the use of questions seeking data reporting knowledge and belief. Greig et al (ibid.) suggest that children in the early years of primary school tend to agree with the questioner when open questions or statements are used and that those children can be literal, easily distracted and prone to invention. As a result the children may sometimes respond with random spontaneity but this may be tempered if they are comfortable in the presence of the researcher and, as indicated above, a known adult such as their teacher. The children interviewed as part of this study of a local CU are in the later years of primary schooling but those encountered are not generally well-developed linguistically or cognitively for their age. Consequently there will be due vigilance on the part of the researcher in relation to the contextual features identified here.

The researcher is an experienced educator having taught children over many years and as a result is skilled in communicating with children in this study. Further to this Greig et al. (2007, p141) indicate that Grounded Theory is especially useful in situations where little is known about a topic or where a new outlook is needed. It is therefore a method suitable for research into the world of children, where researchers can utilise innovative ways of conducting the research.

4.4: Summary

This chapter has discussed ethical issues and the writer's position in relation to research in the field. Chapters 1 to 3 outlined the context of the research and justified the chosen methodology and selected methods used to collect data. The following chapter will investigate the research context in more detail through an examination of the schools involved and perceived key stakeholders.

Chapter 5: The research context with particular regard to participating schools

Chapters 1 to 4 gave an overview of the context for the research. They also outlined methodology and justified selection of appropriate methods for collecting data.

In the current chapter there will be a description of the context in more detail so that a picture may be constructed of the settings within which the needs of stakeholders in the local Children's University initiative would be examined.

There is contextual information relating to the initial participating schools and the teacher education students supporting the initiative in those schools.

5.1: The first participating school (School 1)

The first school to take part (School 1) is situated approximately twenty miles from the University. A former colleague of the researcher approached the latter with a request to explore the possibility of delivering Children's University activities in that school. The headteacher of the school is an acquaintance of the former colleague of the researcher. The philosophy, underlying structure and approaches of the Children's University were discussed with the headteacher. The Children's University aimed to meet the needs of the school. The former colleague suggested that the school may benefit from science learning experiences provided by the researcher, an experienced primary school science practitioner. This was agreed. It was also agreed that the researcher would arrange for teacher education students to support or mentor the children as the latter carried out learning activities.

School 1 is located on the southern edge of a small town that has a very long heritage in the fishing industry. The town is also a very popular holiday destination. School 1 has two hundred and fifty children on roll. It was built in 1950 as a co-educational, i.e. boys and girls, community primary school. The local newspaper (published 26 April 2011) stated that unemployment in the town and its environs was 4.4% compared to a national average of 3.8%. People aged between eighteen and twenty-four are the highest percentage of claimants of 'jobseekers allowance' with 8.1% claiming financial assistance. The report states that workers in the surrounding rural area have previously not had

to excel academically but that their jobs are in jeopardy with little chance of finding alternative employment. The community is quite isolated and high transport costs prohibit travel to seek employment further afield.

Teacher 1 is a very experienced classroom teacher based in School 1 and she was very enthusiastic about the prospect of participating in the Children's University activities along with her class of ten-year-old children comprising boys and girls of mixed ability. The class was known to contain some children with challenging behaviour. Teacher 1 met with the researcher to discuss which science concepts she would like the researcher to plan to deliver to the children. These were finalised and agreed and the researcher structured plans accordingly. It can be said that the Children's University was striving to meet the needs of the school at this early stage.

5.1.1: The teacher education students taking part in School 1

The researcher outlined the opportunity to participate in the Children's University initiative to some students in his classes of first year undergraduate students. This was achieved in a low-key, informal manner simply because the researcher wanted to keep the initiative manageable within the constraints of his workload. Fifteen students volunteered to participate. They were all at the very beginning of their BA (Hons) Primary Education course, through which they would also become qualified teachers.

5.2: The second participating school (School 2)

This primary school (School 2) is situated in the midst of a large and expanding housing estate that lies three miles south of the University. It is a co-educational community primary school with two hundred pupils on roll. In the latest Index of Multiple Deprivation (IMD) the estate was ranked 11,914 out of 32,482 in England, where 1 was the most deprived and 32,482 the least (DCSF, 2011). Residents of the estate are also classed as having a poor quality of life (DCSF, 2011).

The researcher was aware of the school's social and educational demographic and identified it as just the type of school, with criteria as described above and also earlier in Section 1.2, that may benefit from the Children's University initiative. The initial approach, therefore, came from the researcher.

The researcher met with the school's headteacher in order to outline the Children's University initiative. The researcher made an offer to provide a programme of learning experiences of any type, e.g. any area of the curriculum, to suit the needs of the school. The headteacher was interested in the initiative and suggested a series of science sessions be delivered to Year Five (9-10 year old) children. A meeting was arranged between the researcher and the class teacher. The latter was also the science subject leader for the school. She was an experienced teacher.

5.2.1: The teacher education students taking part in School 2

The students volunteering to mentor children as part of the initiative were first year undergraduates undertaking a BA (Hons) Primary Education course leading to Qualified Teacher Status. A different grouping of fifteen students volunteered to participate. Invitation to participate was again made at a low-key level in order to keep administration manageable for the University tutor.

5.3: The third participating school (School 3)

This school is a co-educational primary school originally built in 1895 in the old part of this seaside town and having strong links with the local fishing industry. It has undergone much recent refurbishment and improvement. Many of the children demonstrate challenging behaviour and there is a high proportion of children with English as an additional language. A high proportion of families are of Eastern European origin. There are 331 children on roll.

The school's eventual participation arose as a result of a chance conversation between the researcher and Teacher 3 at a meeting of University tutors and school-based tutors. The latter supervise student teachers in their schools.

The researcher was invited to the school to provide more details of the Children's University initiative. School staff were impressed and plans were put in place for delivery of a science module.

5.3.1: The teacher education students taking part in School 3

Fifteen students volunteered to participate. They were second year undergraduates following the BA (Hons) Primary Education course. The timing of the contact with the school, in terms of practical delivery of the learning

'module', meant that only Year Two students were available to participate. An invitation to take part was made to all one hundred Year Two students. Heavy study workload meant that only fifteen students felt able to accept the offer to participate.

5.4: The fourth participating school (School 4)

The headteacher of school 4 is actively supportive of the University. On one such occasion, when he was on campus, the researcher outlined the notion of Children's University participation by his school. As a result there was a follow-up meeting between a member of the school's staff and the researcher. Plans were put in place for delivery of a science module at the school.

The school is situated in a pleasant suburban area of this seaside town. This co-educational primary school has 584 children on roll.

5.4.1: The teacher education students taking part in School 4

The timing of the actual delivery of modules in school 4 meant that, because of the constraints of the University course timetable, the students participating as mentors have been first year undergraduates on the BA (Hons) Primary Education course. Overall on such occasions 60 out of a possible 100 students volunteered to participate in the course of this first year of the initiative.

5.5: The fifth participating school (School 5)

This school was introduced to the notion of a Children's University by Teacher 3 from School 3. She was undertaking a period of secondment to School 5 and recommended the initiative to the headteacher at school 5. Meetings were held between the headteacher, the classteacher who was to be involved and the researcher. Plans were put in place for science modules to be delivered. One of the modules was planned, resourced and delivered by final year undergraduate chemistry students.

This suburban school is situated very close to the sea. It is a co-educational school with 225 children on roll.

5.5.1: The teacher education students taking part in School 5

Students volunteering to mentor the children were final year undergraduates on the BA (Hons) Primary Education course. Twenty students took part and as part of their involvement they collaborated with the chemistry undergraduates. The student teachers were able to advise, where necessary, on matters related to the educational appropriateness of learning materials proposed by the chemistry students.

5.6: Summary

This chapter has provided an insight into the human and organisational stakeholders directly involved in the formation of the Children's University. It has provided a picture of those participating in the research setting. The following chapter will begin to provide an indication of the needs and related motives of stakeholders.

Chapter 6: Beginning to explore the needs of participants and stakeholders and related motives

This chapter will highlight early indications related to the needs and motives of stakeholders associated with the formation of the Children's University. It will achieve this through analyses of the initial data collected, mainly through interviews with participants, and reflection on any emerging themes or categories. This meant that questions posed during early interviews were fairly similar with subsequent analysis using the constant comparison approach until the researcher felt that theoretical saturation had been achieved. Following this, in an effort to explore the drivers underpinning stakeholders' needs in greater depth, some questions were deemed of less use and were substituted with others in order to explore areas that would bring greater significance and depth to the study.

6.1: The first interview in School 1

The researcher met with the Headteacher of the school and the philosophy of a Children's University was explained to him during this informal meeting at the school. Essentially this was to support children in realising their potential as learners and citizens in society. It was to achieve this by trying to provide unique learning experiences. The children's engagement with these experiences would be strengthened through the involvement of student teachers as they acted as mentors to the children. The Headteacher felt that the children in his school would benefit from involvement in a Children's University. He stated that many of the children were socially deprived and that they would benefit because of the involvement of many positive role models active in the learning situation.

The first scheduled interview was held with a very competent and experienced class teacher at the school. The interview was held at the school before the intervention, i.e. before the children had participated in Children's University activity. The interview itself was unstructured in nature. It began by exploring the nature of the school and its children and then there followed an examination of the school's motives for participation in the initiative. Line by line coding of the transcription was followed by reflection on common terms and notions that were prevalent in the teacher's responses. This reflection was recorded in

memo form following the transcription. A summary can be seen in Table 4. Examination of the teacher's comments suggested that she made links between socio-economic deprivation and aspirations. Indeed, it must be borne in mind that, in compiling the Table, it was difficult to compartmentalise comments related to categories. It did appear that this was difficult because the categories were interrelated. This is particularly apparent when considering socio-economic deprivation and aspiration. The teacher appears to see that by raising the latter it may have a positive effect on the former. As there is a link here there may be a case for saying that if social deprivation is alleviated then this may have a positive effect on aspiration. Conversely, the teacher states that she believes that families associated with the school would prefer to stay in the area. That is what they aspire to. They want to maintain the local fishing heritage by taking up jobs there or by 'working in the factory where mum worked.' It is a very stable demographic. Families are not very mobile and they stay in the area. Nevertheless the school tries to broaden their horizons, e.g. through initiatives such as the Children's University.

Apart from the activities themselves, the teacher placed great importance on the impact of role models on raising children's expectations. This was endorsed by the Headteacher in comments made to the researcher at the beginning of the first session. At this point, students and children introduce themselves to each other and discuss interests. The researcher, after two or three minutes, wanted to commence teaching and learning activities but the Headteacher intervened and suggested that student-child discussions might continue. As is apparent from comments he made in the local newspaper, he thought that these discussions were at least of equal value when compared to any subsequent academic learning.

Table 4: School 1 – Teacher '1', Interview 1

Emerging theme or category	Examples of associated comment from interview
Socio-economic deprivation	<p>'...because we see the needs of our children as being quite specific in terms of raising their expectations, raising their aspirations...'</p> <p>'...east side of town (location of school) is</p>

	poorer...'
Aspirations	'...children's expectations are fairly low...' '...and what University has got to offer in terms of their futures...' '...aspirations are different from the private housing.'
Community links/profile	'...another link with another area of the community..' 'We've got quite a high profile in terms of the different things in town that we do...'
Role models	'Students provide a different role model for our children.' 'We are always trying to link up with other role models.'
Teaching expertise	'...love having a different style of teaching. They'll love going out of the building and any exciting methods that you can use, they'll just enjoy it.' 'From the school's point of view we want any expertise that you can offer...'

6.1.1: Interview with teacher education students participating in School 1

The teacher education students volunteering in this initiative were undertaking undergraduate study, both at university and in placement schools, with the aim of becoming qualified as teachers in primary schools.

This focus group interview took place on the University campus and involved students who had participated in the Children's University in School 1. These students were to participate later in other schools so this one interview gave an overall insight into the common views of participating students. The students were still in their first semester at the University and some may have felt

awkward or uneasy if interviewed by the researcher (also their tutor) individually. With this in mind the researcher felt that a ‘safety in numbers’ approach, utilising a focus group, would prove more productive. This takes into account potential drawbacks such as some students being inhibited by their peers. Furthermore, as seen in Section 4.2, it was explained fully to these teacher education students that their comments, made as a result of taking part in the initiative, would have no bearing on the assessment outcomes of their degree. It was separate from their degree course and participation was purely voluntary.

The interview began with a focus on what the students wanted from participation in the Children’s University and whether their needs were met. Table 5 gives an indication of the emerging themes with associated key comments drawn from the transcription.

The students felt that participation broadened their experience in terms of working with different age groups and observing different pedagogies. They also felt that the initiative raised children’s aspirations and that a contributory factor was the use of students as role models. This echoes what the class teacher had said.

Table 5: Interview with Students 1

Emerging theme or category	Examples of associated comment from interview
Broadening experience	<p>‘...in the school that I am in at the moment, you don’t get to see many science lessons..’</p> <p>‘...first chance I’d had to work with older children...’</p>
Pedagogy	<p>‘So it was good to see the different approach, the more informal, sort of idea and being able to talk to them freely at the start of each session was really useful and trying to engage them in a conversation...’</p> <p>‘It was interesting to see how it worked being</p>

	<p>really informal and then getting down to some work.'</p> <p>'Getting to see science in a more fun way, like more interesting way.'</p>
Aspirations	<p>'...even though it's really early on in their education it's still a good chance to think about the future...'</p> <p>'.. the kids would ask me questions about university and find them quite interesting so that's one of the aims as well to make them aware of what you can do when you are older...'</p> <p>'...it encourages the lower ability half as well and makes them see it is not impossible.'</p>
Role Models	<p>'...began to, sort of, create a bond with them...'</p>
Learning Environment	<p>'...because we were put into a different room, a different environment, we had the chance to create a different atmosphere.'</p>

When both interviews, i.e. with the teacher and students associated with school 1, are taken into consideration some interesting features emerge and are corroborated. Investigation of Tables 4 and 5 will identify key comments and initial categories become apparent.

A key statement appeared to be that the CU initiative had a positive impact in helping to raise children's aspirations. There were also many references to exciting or innovative pedagogy delivered by a University practitioner supported by his students. This is also linked to the learning environment. The pedagogy was very informal and learning took place in a space other than the classroom, i.e. the school hall. The children responded to this positively. This raised questions, in the mind of the researcher, related to teaching and learning styles and to where learning takes place. For instance, is the classroom, per se, conducive to learning? Does it have negative connotations with pupils and

teachers? Does it provoke undesirable attitudes in pupils and teachers? Is it to do with routine? These are questions that must be explored in future interviews as described in Chapter 7.

6.2: The interview in School 2

As it transpired, the motives driving this school to participate were different from those for School 1. A summary of emerging themes, derived through line by line coding, can be found in Table 6 below.

Table 6: School 2 – Interview with Teacher ‘2’

Emerging theme or category	Examples of associated comment from interview
Substitution for school’s normal practice	<p>‘...and it fitted in very well with what we’d got planned, what we would have covered.’</p> <p>‘ At that time we had a certain science curriculum and we had a certain time for it and that did replace our science lessons and we needed to cover it in preparation for children going into Y6 and doing SATs.’</p>
Pupil enjoyment	<p>‘...everybody had a really, really good experience.’</p>
Student role; informal nature	<p>‘...I really liked was that you brought students with you. The students worked with groups and they were much more...down to their level than possibly a teacher would be. It would be much more formal.’</p>

In terms of the initiative meeting the needs of this teacher it would appear that she saw it as a substitute for her normal practice. She made no reference to

themes emerging from the interviews related to School 1 although she does identify the fact that pedagogy is less formal. Despite this she seems driven by a desire to move the children up through the National Curriculum attainment levels and ultimately to good performance in SATs results (see Table 6). Memo writing attached to this transcription makes suggestions that the classroom practice 'seems teacher-centred rather than child-centred.' This point would need exploring as part of future interviews with this teacher. This would be unlikely to happen because the researcher, with his 'CU manager hat' on, felt the collaboration with this teacher did not meet the needs or aims of the Children's University, the CU Manager or the teacher even though it appeared to meet the needs of the children.

6.2.1: Interview with Headteacher of School 2

The interview with the Headteacher of School 2 in many ways contradicted the beliefs held by one of her teachers (see Teacher '2' above). Table 7 below gives a summary of emerging themes that support those emanating from School 1. As is the case with the other tables, many of the categories overlap. This is partly to do with the vocabulary used by the interviewee and partly because categories are interrelated. The contradiction alluded to above is intimated by the Headteacher in comments that she made. She was keen on the practical approach, the social discourse and the role modelling whereas the teacher appeared to be more interested in maintaining order. The teacher adopted a teacher-centred approach based on improving pupils' National Curriculum attainment whereas the Headteacher took more of a child-centred stance. The latter stated 'I think it was very successful in terms of what I (stresses here) would hope the children would get out of it – building the self-confidence, self-esteem, practical experience and ways of working and mixing with other adults.' The teacher said '...it was very practical but it might not be so tied to the QCA Scheme of Work.'

Thus, the Headteacher had confidence in the CU initiative because it met her needs or her philosophy and the needs of her school and children within it. It seems that one member of her staff needed some Continuing Professional Development in terms of innovative pedagogy as a means to pre-empt children's 'off task' behaviour rather than to rely on more controlled pedagogy.

Table 7: School 2 – Interview with Headteacher

Emerging theme or category	Examples of associated comment from interview
Aspirations	<p>‘...it gives them the opportunity to work with adults that they view as trusted adults, erm, so they just get the chance to develop their social skills, their self-confidence, self esteem and aspiration really.’</p>
Pedagogy	<p>‘...that we do not always give them enough opportunity to develop a practical approach...’</p> <p>‘It was also successful from the point of view that the children were looking forward to it and anticipating what they might learn. That was also successful. Erm, and I think, erm, just talking to you and the students at the time when it was happening there were issues around this way of learning which I think, you know, there were barriers to begin with but as it progressed we saw that these were overcome.’</p>
Community links	<p>‘...and working with partners from the wider community...’</p> <p>‘...to invite other adults in as mentors or students or from the wider community is always very helpful...’</p>
Self esteem (in pupils)	<p>‘...building the self-confidence, self-esteem, practical experience and ways of working’</p>

6.3: Interview with Teacher '3' in School 3 (before intervention)

The teacher felt that the CU initiative would suit her school. She stated that she was 'looking for inspiration'. Exploration of this transcription, and Table 8 below, shows that the teacher was eager to develop her science pedagogy. She was in need of some Continuing Professional Development (CPD).

Table 8: School 3 – Interview with Teacher '3' (before intervention)

Emerging theme or category	Examples of associated comment from interview
Pedagogy	<p>'I would like to find more inspiring ways of teaching science. '</p> <p>'I'm hoping that will encourage them (the Parents) to want to come into school to see exciting ways of teaching the children.'</p> <p>'...other staff can pop in and watch and it motivates them to become more interested. '</p> <p>'I think it will meet my needs of teaching science in that I hope I will look at a different way of teaching science and make teaching of science more exciting.'</p> <p>'I'm looking for some inspiration.'</p>
Self esteem (pupils)	<p>'... about building on children's self esteem and that is something that is particularly important to our children who have low self esteem.'</p>
Community Links	<p>'Well I'm hoping that we can involve some of the community members, invite some of the governors who are</p>

	<p>members of the community to become involved in the science days and invite some of our parents because we are trying to make closer links with parents and to stop</p> <p>'We don't have a great record of parents wanting to come into school .school seeming such an austere place.'</p>
<p>Aspiration</p>	<p>'...but I think it will suit the children at this school because some of them are lacking in motivation.'</p> <p>'I'm hoping that this will help them realise that learning can be fun, and it isn't about doing something because they have to but it's something they want to and they want to learn.'</p>

It would appear that this teacher felt that this need for CPD in science was not restricted to her. She felt that other teacher colleagues on the school staff would be motivated as a result of observation of CU activities provided by the researcher.

The interview gave rise to other features that were of concern to the researcher. The teacher intimated that parents would be impressed by 'exciting ways of teaching.' She also stated that the children would benefit by doing 'something they want to' and that they would 'want to learn' because they 'realise that learning can be fun.' There were concerns here because, for the benefit of all learners, the selected pedagogy should be fun and relevant to the learner. The learner should be excited and engaged. It appeared that this teacher lacked the expertise, ideas or confidence in her ability to teach in this way.

The teacher hoped that involvement with the CU initiative would also improve community links and in particular might encourage parents to take a more active

part in the life of the school. The school is in an area of social and economic deprivation. Adults in such areas have often had poor experiences of school during their own childhood and consequently are reluctant to make contact with their child's school. This may arise from feelings of insecurity, resentment or lack of trust. As a result there is a chance that these feelings are conveyed to their children and a cycle of malcontent may be initiated. This may be manifested in the low self esteem of many of the children. This was also evident in both School 1 and School 2 above.

Furthermore, in all three schools visited so far, teachers hoped for an increase in children's motivation and aspirations. There is a possibility that the origins of this aspect lie within the cycle identified above and that, perhaps, some of the parents are deprived of aspiration. This notion will be explored in future interviews.

6.3.1: Interview with Teacher '3' in School 3 (after intervention)

The same teacher, in 6.3 above, was interviewed following participation in the Children's University. Once again she stressed the benefits of the initiative in raising children's self-esteem. In addition, as a result of her reflections on the CU sessions, she recognised that the 'exciting' pedagogy and content was found to be fun and enjoyable by the children. Her suggestion that the children would realise that 'science could be fun' as a result of the CU sessions was of concern to the researcher as it intimated that the children had not been led to realise this in the past. This was closely linked to the motivation that it developed in the children. In turn, this had a positive impact on children's behaviour. The latter feature, prominent in the teacher's mind, was also alluded to when the teacher highlighted the important role played by the student mentors. Their sheer presence, apparently, had a positive impact on children's behaviour. It seemed that the practical nature also had a bearing on both the children's motivation and on modifying their behaviour. These aspects were hinted at by the Headteacher of School 2 in section 6.2.1. It may be that teachers shy away from engaging children in practical work because the children are likely to misbehave. It would appear that the opposite may be true in that, if the teacher takes risks in employing a practical approach, the children will engage in a meaningful context. Thus any misbehaviour may be pre-empted. It may be interesting to explore the presence of any 'self-fulfilling

prophecy' in respect of the relationship between practical work, teachers' trust in pupils and the impact on pupil behaviour. Key statements drawn from the transcription can be found below in Table 9.

Table 9: School 3 – Interview with Teacher '3' (after intervention)

Emerging theme or category	Examples of associated comment from interview
Fun	<p>'...particularly my class who are lower ability I think it would stop them having that awful feeling that it's going to be...they just wanted to enjoy it and I think they'd learn from it.'</p> <p>'Overall I think the main thing we wanted to get was the enjoyment and I think the children thoroughly enjoyed it, erm, I think it made them realise that science could be fun.'</p>
Behaviour	<p>'..because often we can have challenging behaviour with more practical.'</p> <p>'...he can be very challenging but in that activity it really met his needs.'</p>
Student role	<p>'...I think having that guidance and having people just to point them in the right direction and somebody to talk to made a difference...'</p>
Motivation	<p>' I'm thinking of certain children, really came out of themselves and really took part and really enjoyed it whereas before in lessons they tended to sit back.'</p>

Self-esteem	'...the whole idea was to build the self esteem and to make the children more confident.'
Pedagogy	'...think it moved away from that 'now write about it' situation. I think they felt they could just go in and enjoy the science.'
Staff and parent involvement	'We had a parent governor in who was really positive about it. He really enjoyed it and said that he wished he'd had that kind of experience himself at school. The science that he'd had was more or less the teacher doing it and you sat watching then go and write it up. So I think he enjoyed it, erm...the other teachers involved enjoyed it and the Teaching Assistants...a couple of TAs that you met on the last session...they really enjoyed it.'

As stated previously many of the categories are related. In this case, children, teachers, teaching assistants and parents were motivated and excited by the pedagogy. It almost seemed as if the science teaching and learning was extraordinary but, in the eyes of the researcher, it was not. This raised concerns about the training and continuing professional development of teachers.

6.3.2: Interview with children in School 3 (after intervention)

At this point, it seemed prudent to interview children in order to explore the notions elicited above and to glean a differing perspective. In other words, would the children themselves uphold the observations made by significant adults in the children's education? As discussed earlier, in Section 4.3.2, the need to adhere to stringent ethical procedures was strictly observed. Children attending school 3 were interviewed as part of a small focus group in the

presence of their trusted teacher in order to try to ensure that they felt safe and at ease with the situation. They were in a state of some excitement following lunch and prior to a Children’s University session. Emerging categories can be seen in Table 10 below.

Table 10: School 3 – interview with children (post intervention)

Emerging theme or category	Examples of associated comment from interview
Pedagogy	<p>‘There was going to be lots more things to do.’</p> <p>‘Erm, because when we, like, do it here on the big whiteboard we like do all games about science and we like make stuff in there and try and discover what it is supposed to be like...’</p> <p>‘It was different but interesting at the same time.’</p>
Fun	<p>‘Fun, exciting, really interesting...’</p> <p>‘There was going to be lots more things to do.’</p>
Learning environment	<p>‘I think it was quite a good place to take it...Because there was more room, you could do more than one activity in it. Like in the classroom you could only do like two activities or one...’</p>
Student-pupil	<p>‘Sometimes when you do science in here you didn’t have any helpers and you only had Mrs. M (teacher) and she</p>

	had to go rushing around. And you didn't have anybody to ask if you got stuck but in there you could ask...'
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The children were motivated by the variety of practical activity. This reinforces what the teacher in Section 6.3.1 suggests. The children were focused and there was none of the misbehaviour hinted at by the teacher. The children were trusted to execute their practical tasks sensibly. They responded positively to the guidance of student mentors. Use of stimulating, less structured pedagogy in an informal environment prompted positive response from the children who, it seems, were not used to 'hands-on learning' but were offered experiences based on games on the interactive whiteboard. Teachers interviewed in the study have frequently commented on the researcher's use of practical resources. It may be that teachers lack the time to provide such resources for children's use or it may be that teachers lack the vision, expertise or training to deploy them.

6.4: Interview with teachers at School 4

School 4 is a large primary school, attended by approximately five hundred pupils, with a good reputation within the community. A team of 3 teachers (plus the Headteacher) were involved in developing the Children's University at their school.

Table 11 highlights some new areas identified by the teachers as particular drivers to their involvement in the local Children's University. Some of these drivers echo what has been identified in previous interviews with teachers and children such as motivation, raising of aspiration, pedagogy, behaviour of the children and the learning environment. Significantly, they placed a major emphasis on the notion of teaching expertise of the researcher, in leading science sessions, as an important factor in the success of this aspect of the initiative. This feature impacted on the learning of both the children and the teachers. There was a situation where the subject and pedagogical knowledge demonstrated had a positive impact on the professional development of teachers and student teachers as they observed and reflected on the content of the sessions.

Table 11: School 4 – interview with teachers (post intervention)

Emerging theme or category	Examples of associated comment from interview
Pedagogy	Working with an adult who to them is a science teacher, a science specialist in a group where they get a voice. The quieter ones who don't always get a voice – it is giving them the opportunity.
Expertise	<p>It gives children a chance from someone who knows a lot about science teaching in the same subject.</p> <p>It gives children a perspective on science that somebody with more science background will be able to give them.</p> <p>as primary school teachers we have to be Jack of all Trades and it's nice for children to have an expert teaching them on a particular subject.</p>
Learning environment	I think it teaches them as well to alter their behaviour because of the different setting.
Behaviour	<p>That was great. There was no silliness. It was good seeing them talk.</p> <p>They learned an awful lot of social skills to do the science and mixing with different people.</p>

Aspiration	<p>I think it might also encourage them to specialise in science later.</p> <p>I think it raises the status of science. It does for me as a subject leader observing the children. I can see that it is raising the status.</p> <p>I think with the children it raises their self esteem.</p>
Community	<p>I think it is important to make contact with other establishments, as a school, to develop our own needs.</p>

From a pedagogical point of view it seems that the children benefited from the social aspect of learning in an informal environment and from a more child-centred approach that valued the pupil voice.

6.5: Interview with interested Head of Department (from a different department)

This local Children’s University had been in operation for one year and its development had attracted the interest of significant others within the University (as Higher Education Institution). Departmental Heads outside of the researcher’s Faculty showed an interest. Their enquiries were in relation to their departments’ own Outreach work and to how that might complement undergraduate mentoring of children within the CU. Consequently an interview was conducted with such a Head of Department at the University. This person had some responsibility for employability of University Graduates. It can be seen again that responses within the interview echoed themes that had emerged in previous interviews. These are identified in Table 12 along with other emerging features such as Graduate Employability and drivers such as University Policy, hierarchical influences and Government Policy.

Table 12: interview with interested Head of Department

Emerging theme or category	Examples of associated comment from interview
Pedagogy	<p>I think its good for the pupils and the staff by making them think about how they can deliver the curriculum perhaps in a more innovative and exciting way.</p> <p>I think that sometimes the work and energies of staff are sapped by ensuring that people get certain grades at certain stages and I think involvement with CU does open hearts and minds and gets people to look at things from a different perspective.</p> <p>In addition to their teaching practice they get to go and do innovative things in schools</p>
Expertise	<p>I also think from a curriculum perspective it's easier for you to get into schools by using CU to link to the NC because it opens the doors for you. I think there is a lot of merit in the soft skills model but I think your model is more sustainable.</p>
Community	<p>Well just to say that the presentation that you did (Graduation) got parents in and maybe we should have told the parents a bit more about what your aims are but the parents loved it.</p> <p>I think we should extend it and as</p>

	<p>you're aware there's a lot of deprivation within this region and we can identify quite a number of Electoral Wards that have a high level of deprivation and we ought really to have a plan to roll that activity out.</p> <p>It needs to be sustained and put on a more formal platform. It needs a bigger space in which we can all contribute. I believe in it and could contribute and not because I want something for doing it. But because I want to do something for young people in this area.</p>
<p>Aspirations</p>	<p>The students that you work with I think they are inspirational. But if one of our students or a young person who's got skills and abilities or talent goes in it opens up the minds of young people and I think it really has an impact on aspiration raising.</p> <p>The work you are doing with primary school children, you don't do secondary at the moment do you, is having a real knock-one effect in terms of raising aspirations.</p>
<p>Employability</p>	<p>I think you are doing an absolutely fabulous job for the teacher training students because I think that they can get enhanced employability skills.</p> <p>...things which then they can discuss in an interview process. From an</p>

	<p>employability perspective it's key.</p> <p>I think that it impacts on the employability of our graduates.</p>
<p>Hierarchy within the University system</p>	<p>Unfortunately the University lost somebody who knew exactly what you were doing and probably you need to do a 'catch up' with the replacement.</p> <p>You need to bring someone else senior up to speed with what you are doing. In terms of why the university should value what you are doing, if you look at the university's strategic plan it says that we should be an anchor institution. It talks about being an anchor institution for communities and influencing broader societal outcomes. From that perspective I think the CU fits.</p> <p>I think it can be managed from anywhere but I think with initiatives like this, non-mainstream initiatives, I think you need a senior champion. It might not be PVC level, it might be your HoD or your Dean of Faculty but you certainly need someone who's got a good overview of what your aims are and where you are taking this so that they can champion your cause. You can't do everything.</p>
<p>Government Policy</p>	<p>I think the change in the HE White paper and the fees regime and the fact that there is much more</p>

	competiveness in the HE sector. (In response to a question about change in University attitude to CU).
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It appears that there is a need among some stakeholders, teachers and student teachers in particular, for professional development based on the pedagogical expertise of the researcher in the capacity of science educator. The capacity to fulfil this role would seem to depend on the authorisation of senior management at the University in response to UK Government policy.

6.6: Interview with the university’s Widening Participation Manager

The University, in line with many other Universities established in the United Kingdom, employs a Widening Participation manager. Widening Participation comes within the remit of the Higher Education Funding Council for England (HEFCE). The aim of Widening Participation, as part of UK Government policy, is to encourage an increase in the number of people entering Higher Education. There is a particular emphasis on inspiring entrants from lower income families, entrants with disabilities and people from ethnic minorities.

Table 13: interview with Widening Participation Manager

Emerging theme or category	Examples of associated comment from interview
Pedagogy	Seeing enthusiasm and seeing different ways of being taught and understanding that there are other ways to learn and it might not just be in the classroom. Especially outside activities, so getting the stamps from local community, things like museums. They can understand that education isn’t just about school. You are always going to be learning and even the ones who are maybe not academic,

	<p>they can engage with it because they are seeing other ways of learning.</p> <p>Also when you take students in to see how you teach is another way of teaching them so you are actually showing what your practice is rather than just talking about it in a lecture theatre. So you can bring in real life situations about how you actually sell a subject so in like behaviour management.</p>
Expertise	<p>I think they probably get the expertise of the people running the activities so for example you going into a school, they will learn from what you do, which they can then pass on to other kids. So there is kind of like a snowball effect to it. Also they are working with students. They, everyone learns from everyone else really. Students are learning, the teachers are learning from the students about how to communicate effectively in different ways.</p>
Community	<p>... each CU is run differently. It's about curriculum enhancement and also about outside learning. So, learning in the community and bringing that into children's lives.</p> <p>I think schools like bringing people in from the outside world to talk to their children and a partnership between a school and the university is always</p>

	<p>going to be seen as a good thing in terms of their own development, in terms of their kids development and also from a university perspective, lecturers' development and students' development.</p>
<p>Employability</p>	<p>I mean university students. Because they are at the forefront of actually learning about primary school teaching now, so anything they bring into the classroom, the teachers who have been in for five or six years are going to learn from them and take away something as well.</p> <p>Partnerships with schools. Closer links with the community. I think the main benefit is the students going into schools and seeing one of their lecturers going into school and teaching. So they are always going to get the main benefit from it and as a university if our students have a better experience they are more likely to get a better degree. Therefore, let's be honest, we rise up the league tables.</p>
<p>Hierarchy within the University system</p>	<p>I'll always support something that I believe is going to develop children, especially in this area where there is a lot of deprivation. The research says you have to work with younger children to break down the barriers they have about university. It's not just about selling university to them but</p>

	<p>about making sure they have an understanding of what it is and that it is open to them. Taking students into schools is probably the best way of breaking down those barriers because they get role models from those opportunities. That's the reason I backed it and I will continue to back it if I have the money.</p> <p>I think on the other side I think they realise that students want to work with younger children and there is the employability side.</p> <p>If you have the support of someone at senior management level you are always going to piggyback on it and get more backing. But I think that if you get the backing of senior management then I suspect most departments will piggyback on it because their department will get more publicity and more money.</p> <p>I think the problem is internal rather than external. It's getting the backing of the campus and the university as a whole. It takes a long time to change things. These things need to be put in place before the sustainability goes.</p>
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Extracts from the interview with the Widening Participation (WP) manager can be found in Table 13 above. Again, it can be ascertained that key aspects continue to emerge. The WP manager observes that the pedagogical expertise and enthusiasm of the researcher, in the capacity of science educator, has an

impact on children, teachers and student teachers. In each of these cases there is an impression, from what the WP manager says, that such learning and professional development is acquired informally and in situ within the classroom setting (see comments in the pedagogy, expertise and employability sections of the table).

Further to the above there is additional evidence, from this interview, that support from personnel nearer the top of the University hierarchy has a great bearing on the potential success of the local Children's University initiative. There are further indications that such positive intervention by senior management is in response to UK Government policy drivers.

6.7: Interview with Parent Governor A

The WP manager interviewed (see section 6.6) also alluded to the impression that the Local Children's University created a rapport with the parents of participating children. The WP manager felt that, largely as a result of attendance at the children's Graduation Ceremony on the University campus, the parents were fully supportive of the initiative and were proud of their children's achievements. Conversations with teachers of participating schools endorsed this and, in one school in particular, examination of the children's Learning Passports revealed evidence of parental practical support. There were admission ticket stubs from centres that were active Learning Destinations and which children had obviously travelled to in the company of parents. Learning destinations are places such as museums, discovery centres or art galleries where children can collect 'visas' or learning credits in their Learning Passports. It seemed prudent to interview parents to explore their needs in relation to their children's participation and the outcomes of such an interview, with a parent governor, can be seen in Table 14 below. By definition, a parent governor in a UK school is usually the parent of a child in that school but the parent also serves in an official capacity on the school Governing Body responsible for running the school.

Table 14: interview with Parent Governor ‘A’

Emerging theme or category	Examples of associated comment from interview
<p>Pedagogy</p>	<p>But you’ve got all the other children; it’s going to drive their learning. The mainstream, the middle of the road. Why is this different, it’s a new way of looking at things...</p> <p>In terms of the classroom, the primary school environment. I’m not a primary school teacher but a lot of the ways that the subjects are taught, it seems to me, watching your video and the things you have produced... It’s different, more interactive, it’s fun, it uses the children’s perspectives. It strives at really making the learning enthusiastic. It brings students in, so it brings it alive so although primary school teaching is very good, it’s different. It’s almost like bringing in someone really good, TV-type learning, into the classroom. I don’t know if you’ve tried to bring that together. Oh what are they called, science programmes aimed at Y5 and 6. It’s that type of active learning and it’s fun.</p> <p>I think they are driven by the activities. I think until it gets to the end and they are going to experience it, I don’t think that they can know what the</p>

graduation would be like.

They look at, well what is it offering me. Am I enjoying it? Are my friends enjoying it? How am I interacting with the people leading this? So it's quite far in the future is graduation...

I think they get a new way of looking at their teaching. I think it's someone coming in, external, with enthusiasm, with a new way of looking at things, with a new way of facilitating that child's development and that group's development.

They get the chance to see people with a lot of experience in certain areas of teaching doing their job. They interact with teachers, interact with children in a different way. They get a different fresh perspective on how to teach certain areas and bring children in. How to enthuse, how to facilitate and how to reward children at the end.

You are because you have the ability to go in there and just hit the children with lots of activities, very quickly. I think that hitting them with a lot of activities and making it visual and introducing the humour with it, is a different way to how primary schools traditionally educate in science. So you may not see that yours is fast-hitting, gets them interested, it makes them think and is designed to be this really

	quick way of grabbing their attention.
Expertise	<p>It brings in enthusiasm in an area that can be quite difficult in terms of facilitating extra learning, facilitating science and it brings in that extra level facilitating children's needs.</p> <p>They are going to pick up things from it and it's a support for them, I would hope, within the classroom. As a governor we look for anyone coming into the school with a different approach as being a learning experience for everyone involved. Teachers, leadership, governors as well as the children.</p> <p>But do they go in courses that actually give them different ways of looking at things and coming in with enthusiasm, I don't think they are that widely available. Obviously they have development days and people coming in but that is not the same as watching another person bring teaching expertise interacting with children in another way. I don't see that type of learning being readily available in terms of teachers having time to go and watch how other people do things. So that's valuable.</p> <p>I like the fact that it is led by experienced educators and is supported by undergraduates because they do have the ability to facilitate and</p>

	<p>be enthusiastic and design different types of learning experiences. Students under qualified staff supervision. I think use of students is valuable and I would hope that it will just grow.</p>
Community	<p>As governors we think it is something that will bring in that extra dimension to the education of the children. It facilitates those community links.</p> <p>You're going home and your children are talking about going to university and graduation and that is going to build a network, which is what we want to do as a governing body. We want to bring in everyone and make everyone involved.</p>
Employability	<p>It's also in a very competitive world valuable on their CV that makes them stand out as different from other teaching graduates.</p>
Hierarchy within the University system	<p>All those will become more aware and more enthusiastic, one would hope, about higher education and university learning. It becomes a more community-based campus. The more we can develop things like that and our expertise in things like that, the better.</p> <p>I don't think it is the individual. I think universities are becoming more outward looking in a lot of ways. I think we are seeing that we have a role in</p>

	the community. And it's also a business, it's a business model.
Aspirations	A new way of looking at things. Enthusiasm. They enjoy it and I think it is one way of meeting a lot of different levels of need. The gifted and talented children are going to thrive on it and think this is what I'm going to be. This is what I can aspire to.

The parent governor places a lot of emphasis on pedagogy and intimates that it is informal, innovative and child-centred. In addition this observation acknowledges the expertise and experience of the researcher's science educator capability. The parent governor suggests that it allows observing teachers and students the opportunity to reflect on their practice. It was felt that it would have a positive impact on the employability of the latter. Furthermore, the parent governor did not feel that teachers could undertake such valuable professional development elsewhere on courses and suggested that a key to the quality of acquiring it in this way in a local Children's University was the fact that it involved the real-time teaching of children. In addition the situation was enhanced, for student teachers, by the fact that they participated under the supervision of qualified teaching staff.

The parent governor considered that the local Children's University met the needs of children of a wide ability range and in so doing raised their aspirations. The local Children's University, it was observed, addressed community-based issues relating to the school, the University and the community itself.

6.8: Interview with Learning Destination leader

As outlined above in Section 6.7, a Learning Destination is a place where children can collect credits for each hour of learning that they undertake that is validated by local Children's University activity. Validation means that an activity has been subject to QISS (Quality in Study Support) quality assurance

procedures and has been recognised as providing a quality learning experience.

A leader from an Outdoor Learning Centre was keen to have his organisation recognised as a Learning Destination having been impressed by the overall notion of the benefits to children of Children’s University participation. Table 15 below provides an indication of comment offered in response to the researcher’s questioning. As it transpired, the majority of the interview was spent discussing issues around pedagogy, teacher expertise and availability of continuing professional development.

Table 15: Interview with Learning Destination leader

Emerging theme or category	Examples of associated comment from interview
Pedagogy	Probably, lack of confidence within the school to engage kids with science. I’m just guessing really. From my experience in the classroom some teachers are very unconfident with teaching science because they don’t have a full grasp of it themselves.
Government Policy	we haven’t got those constraints that you might have within a school say SATs and curriculum pressures
Expertise	So they are getting someone in who is an expert in the field and also a creative teacher you can create a really inspiring science session. It’s one of those subjects where you can’t sit down and learn it. It’s about experiencing it hands on. Creativity is a key one. If you are creative, no matter what you are

	<p>teaching or what environment you are in you will make it innovative and inspiring for the kids. If you haven't got that creativity, it's not engaging.</p> <p>I'd like to think you provide a stimulus for reflection and make it thought provoking so they can reflect on their own practice. So after you've been in to do your sessions they might be all inspired and look at how they can develop more creative learning opportunities.</p> <p>But it does make a difference if you are inspired by somebody to have a look at what you are doing.</p>
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The leader felt that schools were opting for input based on science, in order to kick-start their involvement with the local Children's University, because there was teacher insecurity in their ability to teach the subject. The leader suggested that there was a lack of confidence arising from limited subject content knowledge. In turn, this insecure subject content knowledge meant that the teachers were struggling to be creative with their pedagogy. The suggestion was, as seen in Table 15, that the schools had an opportunity to welcome a visiting expert who could teach an inspiring science lesson. The leader observed that this expert, the researcher in this case, might offer inspiration and prompt teachers to reflect on their own practice. The leader said that this might not get such valuable professional development within their own networks and that the inspirational aspect was key to sparking the teachers' desire to consider their own professional development.

6.9: Summary

This chapter has described the initial thirteen interviews that were carried out and provided identification and exploration of the emerging categories that may

support emerging theory. This is good practice in Grounded Theory Methodology. The researcher was wary of 'jumping in too soon' and claiming theoretical saturation. This situation did not arise. Key categories identified were aspiration, community, learning environment, the impact of hierarchy and policy, motivation, fun aspects in learning, behaviour, pedagogy and expertise. There was some indication of core categories. These were arrived at through a process of revisiting and questioning the data. Subsequent reflections on this involved exploration of links between data and in some cases, as a result, dictated a merging of categories. For instance the learning environment, motivation, behaviour and fun aspects of learning were deemed to be closely linked to pedagogy because it was this latter category that appeared to be influencing the former aspects. These categories may be confirmed through further interviewing as described in Chapter 7.

In addition, the researcher had decided to test current findings by examining data using the NVivo 10 software. This served the purpose of exploring the accuracy of the identification of emerged categories or themes. Links between categories were also examined and compared with those derived as a result of manual coding.

Chapter 7: Exploring key categories in greater depth

7.1: Introduction

The previous chapter described how exploration of the initial data had allowed the researcher to identify commonly recurring themes or categories. Emerging data also provided indications of links between those categories. The researcher returned to the data regularly, particularly when prompted by hunches based on early analysis, and this theoretical sensitivity helped to confirm the authenticity of findings.

It was seen in the previous chapter that key categories identified were aspiration, community, the learning environment, the impact of hierarchy and policy, motivation, fun aspects in learning, behaviour, pedagogy and expertise. Repeated interrogation of data prompted the researcher to merge some of these categories based on the relationships between them and specifically the influences that some had on others. The learning environment, fun aspects of learning, motivation and behaviour were found, on revisiting data, to be linked with or be an outcome of the pedagogy employed.

There was some further manual coding of newly collected data mainly achieved through unstructured interviewing of stakeholders who were, in the main, different to those individuals participating in initial interviews as described in Chapter 6. Three of the interviews conducted in this new cycle involved teachers who have been interviewed earlier and who were staff from School 4. This provided an opportunity to check data and also explore aspects such as pedagogy, expertise and professional identity in more detail. This new round of interviews allowed the researcher to identify, through coding of transcriptions, those same categories that had given rise to theoretical saturation as seen in the previous chapter. The interviews also provided the opportunity to explore issues linked to those categories in greater depth.

The data was revisited as usual by querying and reflecting on content in a manual way. In addition, the researcher deemed it prudent to revisit the data to check the robustness of findings over and above that that was achieved manually through the process of achieving theoretical saturation. With this in mind the data was interrogated using NVivo 10 software (information can be accessed at www.qsrinternational.com).

This chapter will discuss the process of analysing data in this way and will highlight the outcomes of the data consultation.

7.2: Coding on paper

What follows is a description of how data from these additional twelve interviews was explored. The researcher transcribed recordings of interviews. Although time-consuming this process had the benefit of allowing the researcher to develop great affinity with the data. Interviews were also transcribed as quickly as possible after they had been conducted. This allowed for more accurate recall of elements of the interviews especially when coupled with field notes on observations of facial expression and body language.

Data referred to in Chapter 6 was considered in sections devoted to interviews with representatives of a particular stakeholder including teachers, children, students, parents and University personnel. Data explored below will arise from transcriptions of interviews with similar types, but different identities (except teachers from School 4), of stakeholders (as described in Section 7.1 above). There were a further eighteen interviews conducted (in addition to the initial twelve). This new round of interviews will be considered in relation to the named categories that have previously emerged from the research. These were pedagogy, expertise, employability and the shaping of professional identity.

7.2.1: Pedagogy

This continued to be a major category. Aspects emerging from interviews with stakeholders included reference to informal aspects of learning, personalised learning, pace, social interaction and accountability. Student K, who had acted as a mentor in the local Children's University for three years, felt that:

...the children get a different learning experience to what they would get with their teacher because they get different people to come in and they get a personalised learning experience.

The student is making a comparison between the learning usually encountered during the school day and that in this local Children's University but then expands on this and makes an observation on what might dictate pedagogy by saying:

I think for the children it makes it less of a learning experience but more of a social experience where they happen to take on board things rather than sitting down and feeling that they HAVE to learn.

In describing how learning within the local Children's University appears to occur informally or incidentally (the student does state that, in her opinion, learning is actually achieved) there is an indication as to why this is less prevalent in school life:

I think because when you are teaching you might do something over 6 weeks and it's based on the same thing whereas with CU even if they have 4 weeks they are not doing the same things, they are doing different things. I think to get it across in an hour with them it's taught differently to how you'd teach it over 6 weeks. You might spend an hour on fair testing but it's all fast paced in CU.

Furthermore, student K intimates that in local Children's University activities there is more focus on practical activity with less of a demand to write. The practical, hands-on nature of the pedagogy was referred to by stakeholders as outlined in Chapter 6 but this student gives an opinion on the focus on writing in science particularly, during the school day in terms of teachers being accountable for children's learning. When asked why writing is necessary in science activities the reply was 'So you can show people that they can do it.' Further to this, and still focusing on accountability, the student suggests that to some parents the levels of attainment used in reporting within the National Curriculum (DES, 1988) framework mean nothing. According to student K, a parent seeing their child wearing a Graduation gown may make achievement more obvious to them.

The researcher considers the scientific pedagogy employed in some of the activities in this local Children's University to be the same as that recommended with the National Curriculum (DES, 1988) and accepted as good practice within science education circles. It is not considered to be as innovative as teachers make out. Student S supports the comments made by Student K in saying:

It's probably stuff they could be doing in normal lessons isn't it? That those teachers could be doing themselves but they don't generally. It's in a different environment as well, not just the classroom.

This need for more effective pedagogy is recognised by the child of Parent Governor L who observes:

...because otherwise science is boring. He [the child] says I'm going to teach teachers how to teach science in a fun and exciting way.

Although Student S alludes to the learning environment (she goes on to suggest that children like to get out of the classroom, even if it is just into the hall) it is the less formal, practical pedagogy that is the major consideration. There is further suggestion here that practising teachers do not appear to be developing professionally in the area of science education or that they don't employ such pedagogy for other reasons such as time constraints, resourcing or pressures to prioritise other curriculum areas as we have seen. Further to this Student S says that 'I don't think teachers often make science as practical as it can be.' This student teacher reiterates what Student K observed:

they do get to do more than they would in a normal science lesson because there they have to think of a hypothesis and write it down and it can be seen as a writing lesson. At CU it's all about doing it and not about writing about it.

Teacher M identifies a need for benefiting from expertise (see Section 7.2.2) and in relation to this declares that perspectives on pedagogy are a key area supporting his development:

Speaking at the moment about our school where science has been difficult because we haven't had a science coordinator. So you coming in has really boosted my science over the last couple of years and given me different angles.

Teacher M bemoans the lack of a colleague to lead the development of science teaching in the school. The teacher then makes a statement that includes several interesting facets:

It has given the children a different view because it is wider and not just focusing on what the National Curriculum says, although the activities are perfectly in tune with that it is more about the whole child than it is just about learning outcomes. I'm not denigrating learning outcomes at all in that because they are received as well. It's almost as if the children forget about the learning outcomes in a good way because they are actually engaged with the task and not thinking about it as work. They are enjoying learning for learning's sake.

The teacher appears to be suggesting that the National Curriculum is limiting the potential for learning. Conversely it may be that some teachers are not being adventurous enough with the learning outcomes that they propose. Teacher M confirms that learning outcomes, in line with the National Curriculum, are met but that the Local Children's University activities take this further. There is an indication of the presence of less formal learning that is engaging, learner-centred and a motivation towards learning for life. The importance of the pedagogy is emphasised again by Teacher M:

I thought that when you came in it was absolutely excellent from the point of view of the pedagogy there. I think as well that the practical nature of what you do and the resources that you bring in are of real benefit to the children.

Further to this reference to the practical nature of the activities and the effective resources, Teacher M said that the activities were engaging and relevant. It would seem that context, too, is therefore important.

The researcher had the opportunity to conduct an unstructured interview with a representative of a subject Professional Association deliberating the problems inherent in delivering Continuing Professional Development input to teachers. Context and resources were also identified as needs by teachers encountered by the representative.

It may be that some teachers lack the experience to identify appropriate contexts to stimulate learning in specific areas of the science curriculum. This may be a result of limited experience outside of teaching, for example in relation to previous employment, or be due to lack of confidence or professional expertise in science.

With regard to the identification of appropriate resources this may be due to a lack of awareness of what is available to teachers or it may be that some teachers lack the vision or purpose to procure such resources. The Student Teachers referred to elsewhere in this section also stressed the impact that particular resources had in local Children's University sessions. Problems with teacher identification of resources may arise from a lack of personal motivation or interest but may also be related to time constraints. Teacher M alluded to this:

I think science, a bit like music and PE, can be seen as a technical subject that teachers don't always feel as confident delivering. It's also a more practical subject so, being honest about myself, I find that the subjects that are more abstract and less resource-heavy can be easier to teach. I'm not as confident with the practical side of things. It's not an excuse because you need to be better organised and resourced. Sometimes when you are pressured for time then those things can get squeezed.

Teacher W, an experienced teacher, when asked what teachers got out of participation in local Children's University activity said:

I think teachers get new ways of working. I think what teachers get are children who are engaged and motivated. They are ultimately engaged in learning and wanting to be involved in the classroom. It's got to have that spin off for them. They've had a positive experience with CU they are going to be more motivated in school generally.

This statement also has a bearing on the outcomes of the pedagogy adopted in local Children's University sessions in terms of pupil motivation. This aspect is referred to in another interview response by the researcher's new Head of Department 'A' (who, as seen in Section 1.4, had replaced Head of Department '1' who had not been interviewed) that considers selection of pedagogy and the possible influence of Government policy (see also section 7.2.4):

I know from talking to children in primary schools that they have been put off science. It may be that they have not done any practical investigations. If they had they would have been excited and engaged with science, I would have thought. I think there has been a lack of opportunity to do that because of SATs pressures.
(Head of Department 'A')

Teacher L described the effect that local Children's University activity had on children's motivation to learn:

They like the fact that they are being taught by lecturers because they think that they are special. They know they are getting a special chance. They love the Passports. They love the independence of filling them in because it their own choice, nobody is making them do it.

In making these observations the teacher is highlighting the professional characteristics of the lecturer as perceived by the children. In addition there is an emphasis placed on the children's willingness to take charge of their learning voluntarily and Teacher L ratifies this elsewhere in the interview:

Then lead them so that they want to learn new things. They'll ask what they want to learn. If you hang their learning onto a project where they think it is not really learning, for instance making a TV film or the Children's University.

7.2.2: Expertise

Stakeholders made references to expertise and those instances it was usually in relation to pedagogical expertise.

Student K described how, from her perspective, the local Children's University benefited the Community, specifically how it strengthened relationships with the Partnership schools in which students were placed, by saying:

It's a good way of connecting with schools. It strengthens the partnership. You are doing this for us so we will take your students.

It must be remembered that this was Student K's impression and that the schools' participation in CU would not have a bearing on schools' acceptance of students on placement. It was hoped that, in sharing expertise, there could be dialogue related to any commonality of desired practice that would strengthen

the partnership in terms of 'singing from the same hymn sheet'. But, as pointed out earlier in Section 4.1, the researcher and consequently the CU initiative, had no influence in determining selection of schools for student teaching placements. Indeed, those University personnel responsible for liaising with schools over such matters had no knowledge of which schools were participating in the CU initiative.

But Student K went on to identify what may be driving this desire for involvement from the teachers' point of view:

To give children the opportunity to do something different. Also to share what you know about science with other teachers so they can then teach that way as well rather than what I said earlier about sitting down and writing. I think if you do something they've never thought of it shows them how to teach a hard concept so they can show that to their next class. They can share it with their colleagues. I mean, like, teaching.

In saying this Student K alludes, again, to a more practical and innovative pedagogy delivered by a 'more knowledgeable other' that is observed by teachers and student teachers in the real time context of the classroom. Student K goes on to suggest reasons why teachers are keen to evaluate such a pedagogical approach:

I think it's because, all the time I've been in school, I don't think anyone has been on a science training course. It's just reading and writing. So maybe they haven't had one in such a long time so the new things that we are now taught of how to do it, they weren't taught like that when they were trained to be teachers. They haven't been shown since how to do different things.

This is echoed by Student S who discusses teachers' needs in driving their participation when she suggests that it is:

ideas maybe? Things that they can use themselves in the future.

Student S thought that 'schools struggle with science.' Further to this Student S considered that it is because science 'content' is so extensive and that many teachers lack confidence in teaching it:

I think it's done in an enthusiastic way at CU. Perhaps it's more enthusiastic than the teacher would be. If they are plumping for it, it might be because the teacher is not very confident with it so they might not be as enthusiastic.

Student S even alluded to the teacher as 'fount of all knowledge' when, in considering an approach in which the teacher plays Devil's Advocate and denies knowledge of particular aspects of science:

They [the children] like it when they think they know more than you. I think it is another thing that teachers are scared of.

This is perhaps a manifestation of perceptions of professional identity in terms of a teacher's lack of confidence with science.

Parent Governor L went further than this and, in response to a question focusing on requests from schools for science input from the CU manager, observed 'I think there might be a fear in primary teachers about the teaching of science.'

Comments made by the new Head of Department reinforce much of the above. In relation to teacher professional development and confidence in science:

I think there is also a lack of science expertise amongst primary teachers. There is also the issue of teachers feeling that because they lack expertise they find it difficult to organise investigations which would be difficult to control, organise, etc. so they resort to demonstrating rather than actually getting children being hands on. I think all those factors impact on teachers' lack of confidence and lack of expertise. That may be one of the reasons why they want you to do science work and also your expertise in the area. It could be that they want to tap into your reputation and your science expertise.

Parent Governor L recounted the comments made by her son in relation to the science he had experienced through the local Children's University:

Did I say to you that my son wants to be a lecturer in science? He says I want to teach teachers how to teach science to children in a way that makes it exciting. He says that people don't. That's after sessions by people like yourself or at the secondary school. He says because otherwise science is boring. He says I'm going to teach teachers how to teach science in a fun and exciting way. I said do you want to teach children, he said no I want to teach teachers because as a child I know how exciting it can be. That's what he wants to be when he leaves school. Perhaps things like CU will make a few more children want to do things like that. Maybe we can influence teachers in the long run.

It can be inferred from this that the child has recognised and responded to the science expertise of practitioners other than teachers at the school. The pedagogy employed by the 'experts' has had a very positive impact on the child. The parent governor suggests that it should have a similar impact on the teachers in terms of reshaping their pedagogy.

There were some references to the notion of expertise in discussions held with Teacher L. Following a query about that teacher's position as an expert, the response was:

I don't know if I'd use the word expert about myself but I have got expertise in certain areas. I'm a very good communicator with children.

Teacher L felt that professionals are embarrassed to use the word expert but was more comfortable with the word credibility:

Expert is an emotive word. I feel very confident in my skills in English, Maths and Science. My curriculum knowledge is good and probably more than necessary for primary education. I think I have a lot of credibility with my colleagues.

The teacher's foundations for 'being credible' in the eyes of colleagues and children were based on being professional (available for curriculum ideas), being diplomatic, communicative and caring.

The issue of credibility was seen in Chapter 6 when teacher education students felt that their tutor's credibility, from their perspective, was enhanced as they observed the tutor teaching children in real time in the classroom. This scenario was put to Teacher L who then commented:

I think that is one of the most important things. I never saw a lecturer teach a child while I was at college. I think it's about, and I'll use the word expert, seeing someone teaching who is relaxed, calm, not fazed by things – I think it is worth ten lectures in a room where you are just learning the theory.

The teacher appears to be suggesting that this 'expert' tutor was relaxed and in control presumably as a result of a confidence in subject content and pedagogical knowledge. This perception, it seems, inspired the student teachers and would have been valued by Teacher I (note – not Teacher '1') when undertaking training at college. The teacher expanded on this view of university tutors but with specific reference to the local Children's University tutor:

Well it's changed quite a lot in the last five years. I think there is a lot more effort on the part of Universities to work with other institutions. So it is more humanised. You are not seeing a lecturer as an academic boffin. I don't feel intimidated by your knowledge, which is degree level, and I know we can speak as equal colleagues.

There may be signs within this statement that suggest a sense of trust between Teacher L and the university tutor borne out of the latter's competent performance in the classroom. This raised interesting hypotheses related to the teacher's perceptions of the tutor's credibility or expertise and vice versa. In turn these individuals' perceptions might reside at various points within a spectrum of progression of professional identity. In essence these perceptions may not amount to an accurate measure of the practitioner's professionalism. They are, however, more likely to be accurate because of the trust that had been developed. The tutor had been seen to be an effective primary school practitioner rather than an 'academic boffin'. The latter term was somewhat

derogatory and suggests a theorist who is out of touch with the practical side of teaching, even to the point of being isolated or unapproachable.

Teacher L was in favour of Teaching Schools as a mode of Teacher Training but preferred a model where half of a course of training was done in University and half was undertaken in schools.

Teacher M reflected on the initiative in a similar vein but had reservations:

I know that there is a big push towards apprenticeships in schools. That is not necessarily a bad thing but I think it is important not to lose the theoretical or academic underpinnings to make sure it is rigorous. Teaching isn't just a craft is it? You can't just devolve it down to d A, B, C. There has to be an understanding that things are evidence-based. I think that would be lost if there was a rejig to school-based apprenticeships.

This teacher stressed the value of research further. This is discussed in Section 7.2.4 in relation to the influence of political agendas within this complex system.

Teacher M was happy about using the term 'expert'. When asked about the benefits to teachers arising from local Children's University participation he volunteered:

Also it may mean that the teacher makes links with the University, being able to access expertise and networking. Otherwise unless they are mentoring students that would be the only access they would have to the University. It provides other pathways to expertise.

The new Head of Department raised the issue of writing in science and the focus on knowledge content rather than on thinking and practical skills:

Another explanation might be that there has been a huge focus on maths and English and in the primary school we are cramming them with facts for the SATs I'm afraid to say.

This raises issues about teachers' ability to fulfil their continuing professional development and it may also impact on the shaping of their professional identity. In addition it demands reflection on the reasons why schools are focusing on the literacy and numeracy areas of the curriculum at the expense of areas such as science. One driver may be Government Policy and recommendation.

The new Head of Department summarised the situation in terms of teacher professional development and identity with science by suggesting:

I think there is probably a big issue and a big need for support with science. I don't know what local authorities have the capacity to do. I think if you are able to offer that plus the CU they are getting a double whammy.

One of the teachers (G) from School 4 (see section 6.4), who was interviewed earlier in the study, was interviewed again near the end of the study. This arose because the tutor had arranged to visit the school to deliver a Children's University session partly in response to a request from an interested representative of a Professional Association (see earlier in section 7.2.1). The representative wanted to observe an 'expert' teaching a class of children in the presence of their teacher in a situation typical of those delivered as part of this local Children's University. The official was interested on the impact this may have on teacher professional development. Further to this aspect the situation arose for a chance informal meeting in a corridor with the teacher who had been previously interviewed, as mentioned above. The teacher welcomed my presence in the school and asked when I would be coming in to teach science to her class. The teacher G was now teaching a younger age group and, although she had previously been a science coordinator with sound science knowledge, she said that my input would be valuable and that she needed inspiration. This intimates that a teacher who is perceived to be a strong practitioner would value access to the pedagogical expertise of the tutor. In turn, the teacher has a perception of the tutor as expert. Furthermore, both the tutor and the Professional Association representative were concerned about an apparent inability of teachers to access continuing professional development as a matter of course.

7.2.3: Employability and shaping of professional identity

This section discusses an area that is related to teachers throughout their career but, in the context of this research, it is particularly relevant for student teachers and those at the transition into newly qualified teacher status because this is probably when teachers encounter the greatest cognitive conflict in relation to the shaping of their professional identity. Some aspects are apparent in the discussions above.

Student K, when asked to reflect on the reasons why students volunteer to participate in local Children's University activity, puts forward the following reason:

I think when you are in first year you just want to spend as much time working with children. I think it fills a gap for them. I think if SE was earlier they'd still want to do it because they still want to work with children.

Student S supports this with the reasoning that participation serves:

To develop the partnership. If it's good for the students then it's good for the University

So these students thought that participation extends the time that students are able to spend in schools regardless of the time officially allocated during the course towards School Experience (SE). But further to this it can be inferred that there is a strong desire for experience in schools during the first year of the course. If this hunger for experience is not satisfied then it may have a bearing on student retention statistics and may have a negative impact on professional identity.

The issues of professional development and, consequently, professional identity were explored in greater depth in discussions with Teacher J who was in the second year of teaching. Teacher J felt that a course of Initial Teacher Education at university had been adequate preparation for a career in teaching. The teacher had intentions to be solely a class teacher but had found that experiences during the first two years of teaching had fostered thoughts of roles outside of the classroom. Professional development had largely been achieved informally through discussions with year group team members. Value was placed on ideas acquired that would help to develop pedagogy and the teacher stated this following this response:

Working as a team comes into things more now than when we were training. Getting ideas from both experienced and inexperienced teachers. It makes teaching a lot better.

The teacher had two mentors during the time as a Newly Qualified Teacher (NQT). In terms of level of support Teacher J felt that the mentors were at opposite ends of the spectrum. The first mentor had provided good support but it had been patchy due to the necessary distractions imposed by other tasks. Support from the second mentor had been consistently good.

More generally it would appear, from what Teacher J said about personal experiences and those of immediate NQT colleagues, that arrangements for inducting NQTs into the classroom vary greatly from one school to another.

When Teacher J was asked if the induction year had been successful the reply was:

I think not overall. It started well but as they saw that all the Newly Qualified Teachers were capable and doing well we were left to it. I think the school circumstances didn't help. The Leadership changed a lot. But we didn't get support in guiding us to other things outside the classroom that would help us. We only had a minimum of one observation per half term. Towards the end of the year we were told we had to do afternoons of experience in other phases and write up a report about it to show how we had been using NQT time productively. I think we were not very happy about that because there was so much going on in the last seven weeks. We were just limited on development and talking to NQTs from other schools they had a lot of going on courses and induction things that we didn't seem to have. I think it was because we had such large numbers of NQTs in school that played a big part.

Teacher J also felt that there were financial implications in saying that 'we understood that the school could not afford to send us out'. So it seems that most of the professional development had been achieved in school during the school day. Classroom practice such as pedagogy was learned informally but there had been some learning of non-classroom related aspects through formal team meetings. The NQTs in this school seem to have been left to plan their own development as Teacher J observes:

I think it was a lack of information on what we can do. We got told we had to use our induction time in order to develop but on the other hand there was a lack of guidance of what we could do in that time.

Teacher M also said that the quality of Newly Qualified Teacher induction was patchy and that it 'depends on how seriously the school takes mentoring'. Furthermore the teacher said:

Obviously you have to fill in your NQT year and the school has a responsibility to do that. There isn't a national network as far as I am aware so it is patchy. It depends how busy the Head is and if the NQT is Ok then they will be left alone.

The NQTs' vague perceptions of what to expect in relation to their professional development were compounded by the school's poor guidance and led to an unsatisfactory transition from teacher education student to practising teacher. The transition may be difficult even with the best of support as Teacher J suggests:

I think the biggest thing is the workload. It is a big jump to taking a full class and doing the planning from scratch.

Further to this it appears that a major obstacle is paperwork as the teacher states that it 'was a major thing'.

The problems associated with the transition from student to teacher were also evident in discussions with Teacher L (from School 4) in terms of professional identity and capability. Teacher L volunteered observations on the perceived autonomy of students, teachers and headteachers. The teacher, when asked if teachers had autonomy, inferred potential conflict in terms of differing ethos of these professionals in relation to their employment in new schools:

I don't think it is possible. I think as far as possible we have. I think the Head's ethos has got to be the overriding authority in the school. If you want to work in a school where your thinking is completely different to the Head it just wouldn't work. I don't think a Head would be able to do their job if every teacher wanted autonomy. I'm not saying that I have to do everything my Head says but it just wouldn't work in a primary school if you didn't all adhere pretty much to the ethos of the Head.

It seems that there is an element of compliance at transition mainly due to hierarchical demands. This is discussed more fully in Section 7.2.4.

The NQTs at this school were in a similar position to some of their more experienced colleagues in that their professional development needs are balanced against the needs of the school. Teacher J said:

At the moment it is tailored to the school's needs. If we have a particular focus such as literacy then the school will identify courses. But it is mainly focused on the school development. If we want to go on a course we are asked how relevant it is to the school, what we can bring back. That's the same for class teachers. I think once you move into management and what you want in your career it is better. I think if you show that you want to progress career-wise they take your needs into consideration as well.

Teacher M alluded to this situation too:

I think some schools impose development based on school's needs. My school supports the individual.

Teacher M felt that, if you were ambitious, the school would support your specific professional development needs:

I think for me, it is suggested by my mentor when I do my Performance Management. Now it is about promotion to higher posts before it was subject-based. Subject-based training is led by the LA. Some people are very driven and they will always be thinking about their progress. Sometimes if you are not driven in that way then you might be guided by the Head.

'Performance Management' is linked to teacher appraisal through which goals are set for professional development. It appears that the focus nowadays is on generic management policy issues or maybe issues such as assessment. This is to the detriment of training in subject-based features. It is suggested that the latter are to be addressed by the Local Authority but such bodies are currently

subject to massive cutbacks and restructuring with a result that subject-based training is on the decline.

It appears from this that more experienced teachers with ambition are more likely to be released to attend courses relevant to their own professional development. There is an element of hierarchy in place here, even in matters related to subject, as Teacher J declares:

It's down to the subject leaders to deliver sessions. So one person goes off to the course and then feeds back.

Subject leaders, having attended a course, are tasked to cascade down the learning. This may be fraught with issues related to how information is communicated. For instance, how did the course attendee perceive or interpret content and how did they then repackage it for their school colleagues?

These hierarchical issues are not restricted to aspects within school. They may add to those encountered at Higher Education level, as seen in Section 7.2.4 below, so that they become part of an ever more complex system.

7.2.4: Organisational hierarchy and drivers – central to a Complex Adaptive System

There have been indications throughout the research that the Children's University appears to be addressing a variety of needs among human and organisational stakeholders. Some of these needs were unique to a given stakeholder and some were common needs. Some needs were related to others in some way and some needs were driven or influenced by those of other stakeholders. For instance we have seen in sections above that teachers' professional development may be constrained by the training offered by their schools. The schools, in turn, are under pressure to deliver a statutory curriculum endorsed by the Government in England and Wales. The Government also dictate which areas of that curriculum schools should prioritise, specifically literacy and numeracy.

This section will revisit the journey undertaken in the formation of the local Children's University in terms of the level of support or endorsement afforded to it by University hierarchy.

It was indicated earlier in Section 5.1 that, at the very outset, permission was granted (by former Head of Department '1') to the researcher to set up the local Children's University as long as normal academic duties were not affected. In other respects, endorsement or support by the then Head of Department was non-committal. Later, chronologically speaking, it was documented by University colleagues, as apparent in Sections 6.5, 6.6 and 6.7 that the stance taken by the University management had shifted. Initiatives that helped to embed the University as an integral part of the community were encouraged.

An interview with the new Head of Department 'A' was taken up by the researcher. The new Head of Department 'A' fully supported the activities of the local Children's University from a personal perspective but also; it seems, from a perspective influenced by the contents of a Strategic Plan compiled by senior management of the University:

we know we've got a Strategic Plan and one of the themes is becoming an Engaged University. A university anchored in its local community. What greater opportunity than by using activities from the CU? It is also about 'What are universities for?' They have a role in their local community and region to support people that live in that region. There is a fundamental ethical reason why it's important to do it.

From a more personal perspective the Head of Department observed:

From my perspective I've always seen it as extremely positive and enhancing the work we do with schools, particularly in the current climate where we are trying to have far greater partnership with schools. It is a huge advantage for us to be involved in it so I've never felt that it was something additional, something that detracted. I've always felt that it should be integral and it should enhance our work with schools.

Several years prior to this the fact that the formation of the local Children's University might detract from normal University duties had been a concern of the previous Head of Department. The current climate referred to is the current drive by the Government in England and Wales to educate new teachers in Teaching Schools through the Teach First initiative as part of whole system reform (DfE, 2010).

In section 7.2.3 there was reference to teacher autonomy that focused on teachers aligning themselves with the ethos of their headteacher. Teacher L developed this further by highlighting the impact of external drivers, principally Government policy. The teacher stated that, although the teachers responded

to the headteacher's direction, the headteacher was answerable to political agendas (such as SATs) and that they, as a result, were not autonomous:

No, I think they are completely fettered by politics. I think the SATs have done more to harm primary education than anything else. We are totally driven by them. It's not about the children's progress. It is purely about a League table.

Teacher M, somewhat controversially, identified a current example of such policy. When asked what the curriculum would look like if he were Secretary of State for Education he replied:

I would make sure things are more Research-based. Obviously there is talk of the new National Curriculum but the irony is that it will only be imposed on those schools that are not Academies. So the schools that reflect his ideology are not going to be forced to teach his new curriculum, which is a bit bizarre. There is a lot of emphasis on facts and knowledge. I don't think that is a bad thing but there is a lot of argument about what that knowledge should be. If I was Secretary of State I would be looking at what the evidence says rather than look at my past or my childhood and what worked for me then. I don't want the knowledge to take away from the acquisition of skills and research and questioning and philosophy.

This teacher appears to be concerned about how emphasis on knowledge may be to the detriment of skills acquisition and consequently would seem to favour the latter.

When asked about how these pressures on teachers impacted on their ability to support student teachers in their professional development Teacher L seemed to place an emphasis on an individual's ability to take risks with their pedagogy:

I think the politics does impact on students but if you are creative and imaginative there are ways to work within the system. Although we have this framework that we have to stay within you have to think outside the box. I think it has always been like that. If you are happy to not be like that you can plod along and not be inspiring.

Within this complex system it seems there is need for professional autonomy but its adoption is subject to various pressures such as Government policy, problems with professional development and perceptions of professional identity.

7.2.5: The unique nature of this local Children's University

During the unstructured interview referred to earlier (see Section 7.2.1) with the Professional Association representative she described this local Children's University as 'unique'. She also indicated that she would recommend the contextualised Teacher Professional Development, taking place in local CU activities, to her Association.

Further to this, the tutor (in the role of local Children's University Manager) had to present a report to a Quality Assurance panel that outlined to them the nature of the activity of this local CU. The experienced Chair of the panel indicated that, in her experience, this local CU demonstrated a 'unique' nature that had a positive impact on its learners.

7.3: Visualisation of data using NVivo 10

The researcher used NVivo 10 software to revisit the data and the categories that have emerged as highlighted in Section 7.2. This action allowed the researcher to effectively become reacquainted with data. In turn this prompted further reflection and questioning, some of which was the same as aspects met to date but some of which was different and challenged the researcher to probe them in greater depth.

7.3.1: Working with New Data using Emerged Categories

NVivo 10 has a tool for developing diagrammatic models with which to explore early indications of categories and possible relationships. This aspect was not revisited because it was felt that it had been fully explored via pen and paper methods (and using graphics programs) earlier. For example one of the early categories concerned behaviour but later this was deemed not worthy of core consideration.

Data from further interviews were acquired by transcribing them and then undertaking line-by-line open coding into the categories that had emerged from interrogation of earlier data. These can be identified within the screen shot in Figure 4 below.

As seen earlier in Section 7.1 some of these categories or 'nodes' were closely related and, consequently, could be incorporated into a central parent or overriding node. For example the learning environment, fun aspects of learning, motivation and behaviour were considered to have an association with pedagogy. These could then be rearranged to become sub-nodes of pedagogy as seen in Figure 5.

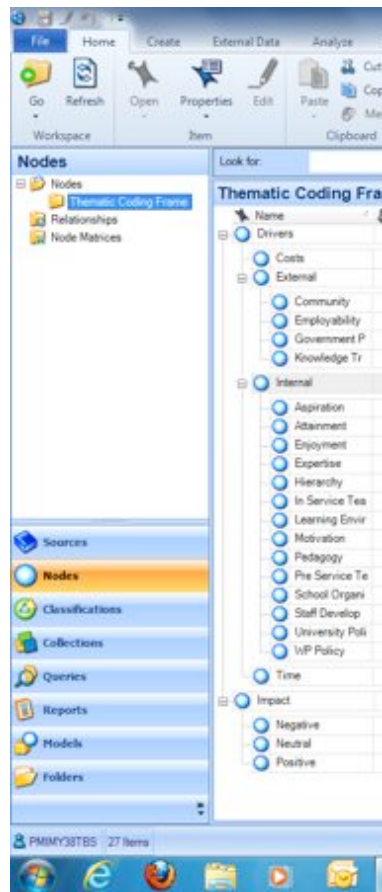


Figure 4: Screen shot of initial categories

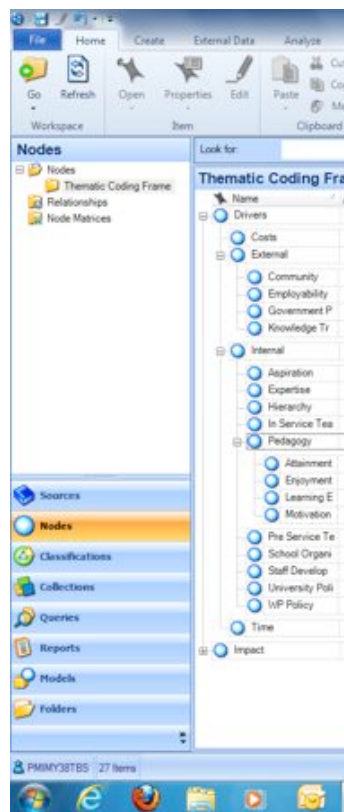


Figure 5: An example of rearranged nodes

In Figure 5 it can be seen that Pedagogy has become a parent node and Attainment, Enjoyment, Learning Environment and Motivation have become the related child nodes.

There were other most useful tools used for analysing data within NVivo 10. These included the Text Search element within the Query tab. This allowed the researcher to explore contexts and potential relationships. For example Figure 6 shows a text search of interviews for the word expertise. There are options within the tool with which to vary the search, for instance by looking for exact matches for the word or to include word stems in addition.

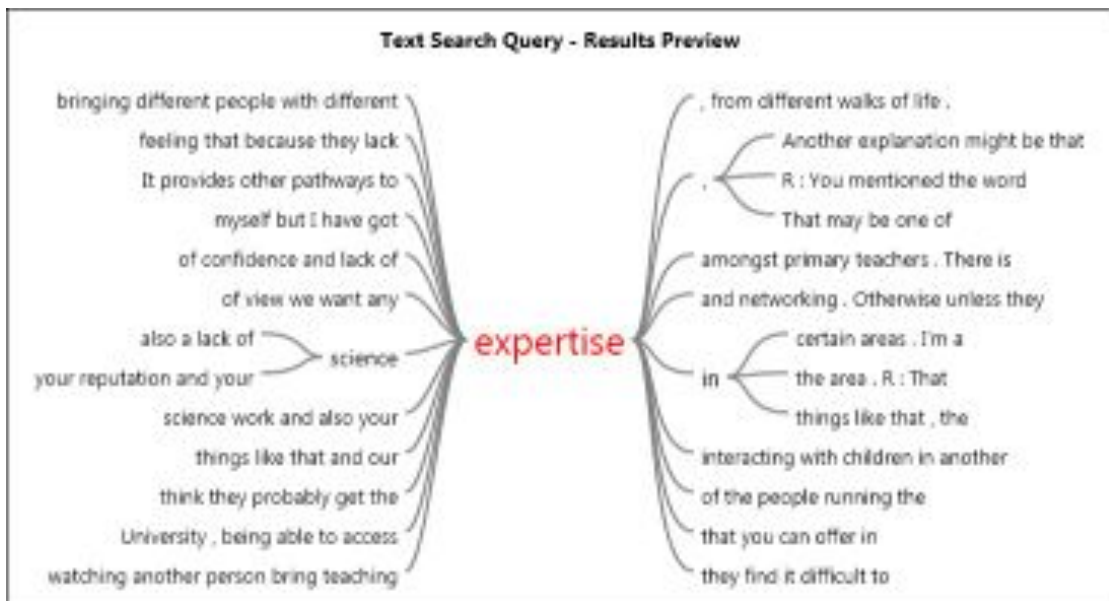


Figure 6: Text Search Query for the word expertise

Similarly a Text Search Query for the word Pedagogy is reproduced in Figure 7:

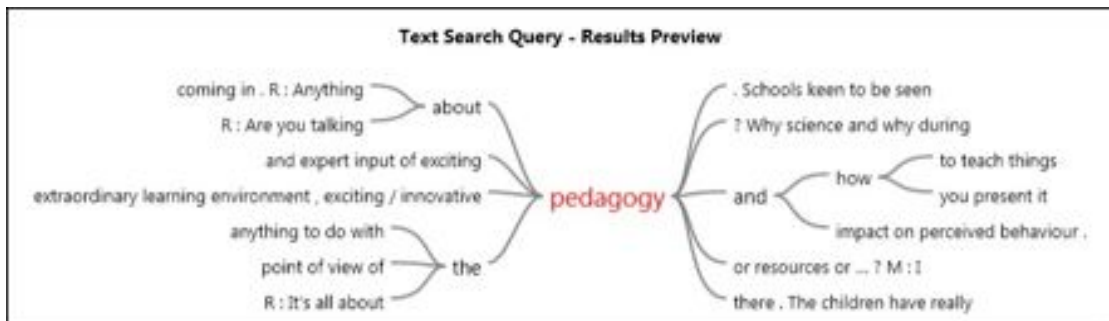


Figure 7: Text Search Query for the word pedagogy

The program will not permit the portrayal and subsequent export of linked parts of the tree to demonstrate context. In order to visualise this here, by focusing on 'expertise' within Figure 6 as an example for consideration of context, the linked terms would be 'also a lack of ... science ... expertise ... amongst primary teachers'.

An excellent tool for exploring emergence of key categories and relationships between them involves the creation of a Tree Map within the Explore tab. The example given in Figure 8 provides an indication of the number of references made to a particular category:

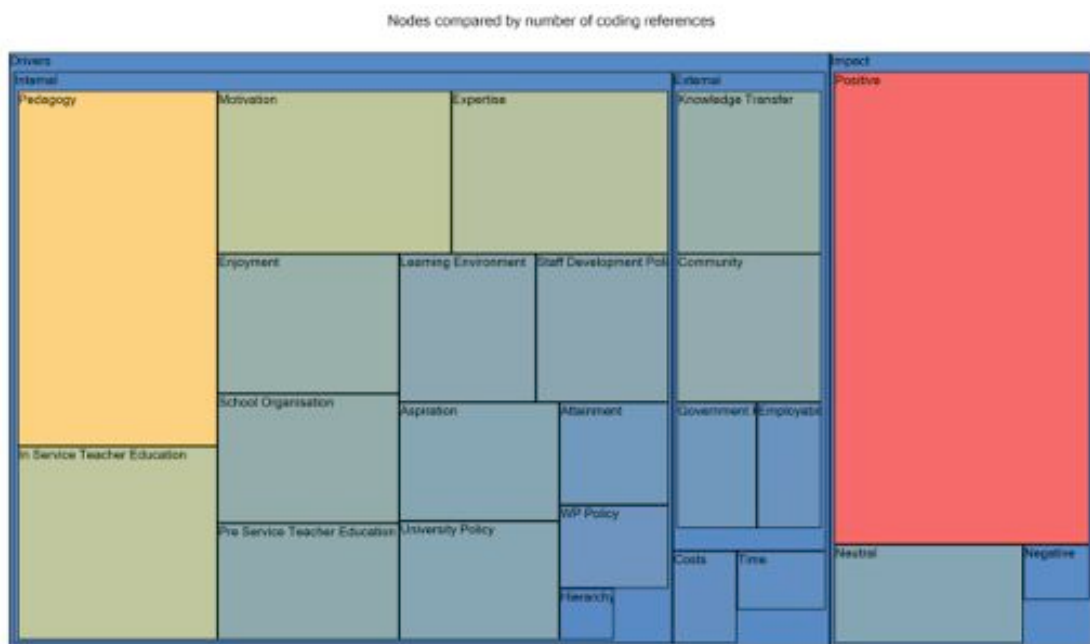


Figure 8: Tree Map indicating emerged categories

It can be seen that participation in activity linked to this local Children's University has a positive impact on pedagogy in relation to in-service and, to a lesser extent, pre-service teacher education and development. In addition there is a positive effect on motivation and enjoyment of relevant stakeholders such as teachers, children and UG students within the school organisation and learning environment. These aspects are cemented together by frequent references to tutor expertise apparent in utilising selected pedagogy within local Children's University sessions. References to raising aspiration, particularly of participating children as voiced by their teachers, has been apparent throughout the study even from the earliest interviews. The category that continues to become more prominent in terms of importance is University Policy. At the

outset there was, in effect, no policy at all. Instigation of the local Children's University was triggered by an informal, verbal granting of permission by the then Head of Department for the requesting tutor to proceed 'as long as it does not interfere with your normal duties and workload.' There was a change of policy as the new Head of Department was more supportive. This has been seen in references to interview transcriptions but has also been prevalent in both formal meetings and informal conversations in that the local Children's University is now seen as 'an important part of our provision'. It has become an important part of the Department's marketing strategy, for example at Open Days for potential students and their parents. More recently still the Department has allocated the local Children's University its own webpage.

7.4: Summary

It can be seen from the above that the needs of stakeholders within this local Children's University, and within what is a Complex Adaptive System, may change or may be static at any given point along the continuum that traces the formation of this local CU. This may be as a result of how the actions of specific stakeholders impact, or not, on other stakeholders.

The results of many of these actions, e.g. the raising of children's aspirations or pedagogy, have been identified as emerged categories confirmed by theoretical saturation. This chapter, in particular, has started to explore and identify the possible reasons informing or influencing some of these categories.

It is apparent that a teacher's development of expertise in science pedagogy is a central issue. This is evident across the range of development from pre-service teachers to more experienced teachers who are in post. This area is of particular interest to the researcher and as it was such a prominent core category it deserved greater attention. There may be problems with how some teachers are able to shape their pedagogy by accessing fresh ideas through CPD activity. This may influence teachers' professional identity formation. There are other features related to the notion of pedagogical expertise and a crucial one may be teachers' perceptions of expertise, either their own or that of colleagues or other practitioners for example the University tutor. There may be several reasons for this including a lack of awareness of 'what is out there' in the very immediate locality, regionally, nationally or internationally; a lack of

access to quality professional development in science specific to their needs; a need for trust based on credibility; a lack of confidence, or a feeling of being hampered by Government Policy.

All of these aspects will be discussed in the following Chapter when they are considered in the process of generating theory.

Chapter 8: Generating Theory

8.1: Introduction

The previous two chapters have provided insight into the collection and analysis of data. Chapter 6 gave some early indication of the possible themes that were resident in data whereas Chapter 7 described how, in reflecting on these and other categories, the researcher was able to return to the field in order to probe them in greater depth.

Chapter 6 described data gathered from stakeholders that gave an indication of their needs and drivers for participation in the formation of a local Children's University. These are identified in Table 16 below.

We saw earlier through the work of writers such as Glaser and Strauss (1967) and Charmaz (2006), in Section 2.5, how important it is to undertake continual consultation with data and resultant analysis. This constant comparison (Glaser and Strauss, 1967) helps to ensure rigour in identification of core categories or themes. Further to this, at each stage of regular researcher reflexivity, it is important to advance development of theory in keeping with the early recommendations of Glaser and Strauss (1967) as central theory is generated in keeping with the constructivist approaches advocated by Charmaz (2006). There are indications of theory development to be seen in the previous two chapters. These approaches included constant comparison methods, open coding of data and theoretical sensitivity in aiming for theoretical saturation.

Throughout this process there has been the challenge of trying to keep an open mind and of recognising the experiences that the researcher brings to the field. These experiences helped to generate meaning from data to inform the construction of theory. It was essential that data collection, analysis and construction of theory were accomplished prior to any engagement with substantive literature. This further assisted the researcher in forming hypotheses stemming purely from the data and prevented aspects within existing literature from tainting such notions or from developing preconceptions.

Table 16: The needs of stakeholders in the formation of a local Children's University

Stakeholder	Need
Children	Fun; Aspiration; Motivation; Enjoyment; a Varied Curriculum and Engaging Pedagogy
Teachers	Subject Knowledge and Pedagogical Ideas; opportunity to observe children in different learning situations
Teaching Students	Subject Knowledge and Pedagogical Ideas; trust in Tutor Expertise; explore Pupil Development and Relationships
Tutor	Maintain active contact with Teaching Profession and practice Teaching; develop University-School Partnerships; enhance Student Learning
University	Strong positive profile in the Community; enhance Student Experience
School	Build links with the University; extend Children's Learning
Parents	Support and Reward Children's Learning
Community	Links with the University; educated, informed citizens

Chapters 6 and 7 have described the researcher's journey towards identification of categories. The researcher frequently found the use of diagrams helped to visualise key elements, to explore relationships and to assess the apparent importance of key themes. The use of NVivo software as described in Chapter 3

was particularly valuable in this respect and it was also helpful in constructing models for the theory.

The current chapter provides further description of how the overarching theory was determined and investigates influential features of its key areas.

8.2: The Main Theory

It has been ascertained in the previous chapter, particularly in Section 7.3.3.1, that core categories are:

- The ***unique nature of this local Children's University***
- The Local Children's University as part of a ***Complex Adaptive System***
- ***The pedagogy*** (employed principally by the university tutor but impacting on other stakeholders including teachers, teacher education students and children),
- ***Pre-service and in-service teacher education (Teacher Professional Development)***
- ***Children's learning.***
- ***Raising of children's aspirations***
- ***Expertise of the university tutor*** with a positive shift in the ***credibility*** of the latter.

Reflection on this situation resulted in the generation of an initial representation of a theoretical model produced below in Figure 9.

The model was to be revisited in the light of a subsequent review of the substantive literature identified as a result of the initial model's key features. Focusing on a core learning experience that instigated any future activity within this local Children's University this diagram seeks to introduce the core categories identified. These are described below.

The former two categories indicated above essentially provide the context for the other categories identified.

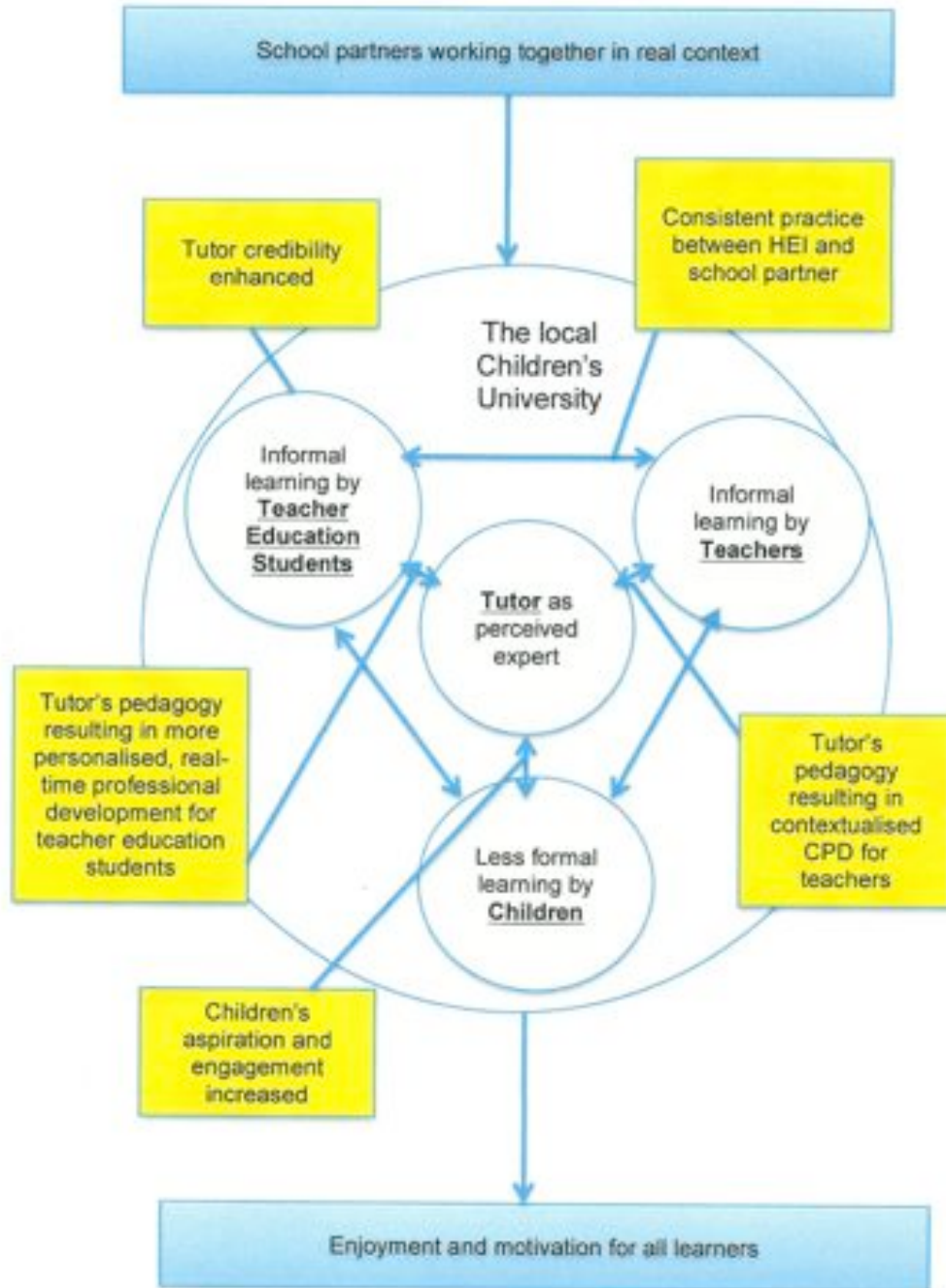


Figure 9: An Initial Model of Generated Theory

The Pedagogy employed by the tutor, which amounted to informal learning on the part of teachers and teacher education students and resulting in less formal learning in relation to what the children might be encountered daily in school by the children (see above in Figure 9), is described below (see Section 8.2.3) in more detail because it stimulated a more in-depth focus on the other core categories of Pre-service and In-service Teacher Education (synonymous with Teacher Professional Development) and Children’s Learning.

8.2.1: The unique nature of this local Children's University

This category was alluded to in Section 7.2.5 where it was seen that the adjective 'unique' was coined by two experienced educationalists each possessing some relevant influence in the areas of Professional Development and Informal Learning. The unique nature is based, according to the Chair of the CU Quality Assurance panel, on the unusual situation where University tutor, teacher and teacher education student are impacting on children's learning. The effectiveness of this situation is further evidenced by practitioners' use of terms such as 'inspiring' 'informal' and 'creative' in describing the pedagogy being practised (see earlier in Chapter 6). Furthermore, the context of a local CU learning experience provided 'real-time' Professional Development for the teachers (pre- and in-service) observing the University tutor who was described as a 'science specialist' or 'expert' by those practitioners during interviews documented in Chapters 6 and 7.

Thus, as can be seen in Figure 9 above, there is a situation where partner University-School practitioners work together in real-time context with resulting mutual benefits to their learning and professional development in tandem with the learning of the children.

8.2.1.1: Developing University (HEI) and School Partnership

In addition, such contextualised learning experiences, where academic, teacher education students, class teachers and children are present at the same time; help to build a more cohesive partnership between Higher Education Institution and Placement School. This may result in more consistent practice and dialogue between the institutions through recognition and appreciation of the practice in each resulting in benefits to teaching students.

8.2.2: The local Children's University as part of a Complex Adaptive System

The formation of this local Children's University (CU) necessitated that it became part of a network of such entities, nationally and internationally, coordinated by the National Children's University that, in its latest incarnation was formed as a Trust in England in December 2006.

Each member of this network has, in order to fulfil the requirements of the Trust, to be affiliated to a Higher Education Institution (HEI) or University. Consequently, the system and its operation become more complex. Further to this, the actions and motives of the groups and individuals working within this system, as evidenced in Chapters 6 and 7 and subsequently discussed in this current Chapter, are complex and interrelated.

8.2.2.1: The university's stance as a major feature of a Complex Adaptive System

The University's support for the local Children's University initiative, fulfilled principally through the opinion and actions of the researcher's successive Heads of Department, changed markedly over the course of the lifetime of the study. The initial support was minimal and cursory in nature. The then Head of Department appeared to give little consideration to the bigger picture, for instance in the impact that the initiative may have on the wider community, but seemed to simply sanction support in terms of it satisfying the interests of the researcher 'as long as it doesn't interfere with normal duties'. The succeeding Head of Department was apparently much more visionary. It was now recognised that the initiative could have a positive impact on the experience and development of teacher education students, on partnership with schools and on standing in the wider community. This view may have been reinforced by features of the new University Strategic Plan which called for activity that would promote the University as an 'anchor institution' within the local community. Allied to this point is the fact that a University Widening Participation Officer, having offered no support at the outset of the initiative, increasingly offered practical and financial support. University Pro Vice Chancellors added visual presence and support by taking key roles at the local Children's University Graduation ceremonies. This hierarchical support was commented on by another Head of Department who suggested that such support from influential figures would help to 'get more people on board' in the project.

Other factors came into play within what was a complex system where action in one area, or by one individual, could impact on developments in another area. It may be that the stance taken by the University, and in particular the Department, was driven by changes in Government Policy. These changes, during the course of the study, included large increases in student tuition fees

and also in the way that prospective entrants to the profession were to be trained. These issues may have had an impact on the necessity for the University to focus on attracting potential students and on enhancing or 'adding value' to their experience. Furthermore, these changes may have prompted a need to restructure course content, to become more flexible and diversified in planning learning pathways and rethinking the ways in which the institution works in partnership with schools.

These aspects have been manifested in changes of attitude over the course of the study. At the outset, as already observed, the University showed little interest but students showed great support and even made statements such as 'it [the local Children's University] should be part of the course'. This situation changed near the end of the study when the Department decided, in restructuring its course of teacher education, to include a module based on the local Children's University. There have also been instances where the researcher's colleagues have taken up the practice of going out into schools to teach children, sometimes with the support of teacher education students. This activity, judging by the findings of the current study, must have been welcomed by schools and must equally serve to strengthen the University-School Partnership through sharing of expertise.

8.2.3: The pedagogy employed by the university tutor

It was interesting to note teachers' comments and responses relating to the pedagogy employed by the university tutor. They claimed that it was creative, inspirational and hands-on. If the first of these labels is considered it may be that the tutor is creative in practice in the sense that he is willing to take risks in selecting content and approach bearing in mind that there is limited knowledge of the children's interests and attitudes to learning. The situation arises where the tutor has the confidence, experience and enthusiasm to present engaging, child-centred but meaningful science activities appropriately challenging a range of learners due to the open-ended nature of content. The activities were identified, by some teachers, in relation to this creativity, as 'hands-on' and practical in nature. This is worrying from a science education perspective because science is a practical subject and children should have ample opportunity to develop practical skills and related enquiry skills by pursuing 'hands-on', purposeful investigations in meaningful contexts. The tutor did not

consider the selected pedagogy to be innovative. This label may be relative to the experience of individual teachers and the extent to which they feel able or willing to be 'innovative'. For instance it may be linked to the extent to which they are prepared to identify appropriate practical resources or to trust children in their use of such resources. These points were identified in some interviews and are just as pertinent as a teacher's ability to have stimulating ideas.

8.2.3.1: Expertise in relation to pedagogy

Teachers frequently made reference to the expertise of the university tutor and made statements such as 'it is good to have an expert coming in to school'. Being able to draw on the science expertise of the tutor was a common reason for schools electing to participate in the Children's University. It was interesting for the university tutor, the researcher, to reflect on this notion of expertise because in effect it had as much to do with perceptions of expertise as in the levels of expertise in real terms. This may be based on status of the tutor from the teachers' perspective, as they had no other concrete evidence of the former's practice at the outset of collaboration. Conversely, the tutor perceived these experienced teachers to be effective practitioners and had no reason to believe that they might differ markedly in terms of relative levels of competence.

Only when there were opportunities to make practical observations and to undertake interviews was there evidence of differing levels of expertise. There may be several reasons for these differing levels of expertise. These may include the extent to which practitioners are willing or able to develop ability in an area of the curriculum, in this case science, and allied to this are the available opportunities, within a given school, to practise that ability. The pressures on the teacher to deliver what is an overcrowded and prescriptive National Curriculum may further compound this. In the case of sessions delivered, as part of the local Children's University, the university tutor did not suffer the same pressures.

The university tutor was able to deliver worthwhile learning experiences that were valued by teachers, teacher education students and children as fun, exciting and relevant. The pedagogy and content were of sufficiently high quality to enhance the credibility of the tutor in the eyes of teachers and teacher

education students and earned respect as a teacher on the part of the former professional. This may have fostered feelings of mutual trust.

8.2.3.2: Trust as a basis for informal learning

Feelings of trust based on confidence in ability and expertise created a teaching and learning situation where teachers and teacher education students, through activity led by the university tutor, were able to learn informally. There will have been instances of good and weak practice exhibited by the tutor and examples of different responses to this practice by the children. The situation that prevailed was one where all practitioners developed a relaxed, informal, professional relationship based on openness and honesty. Individuals were able to identify aspects of practice, drawn from their observations, that they found interesting or of benefit to their professional development. The activity took place in real time and in context and there were opportunities for practitioners to compare points of view and maximise learning synergistically. The children developed trusting relationships with student mentors and thus were comfortable learning as a result of tutor and student intervention. Further to the above there were students learning from their peers and from the teachers. Teachers were able to develop through observation of the tutor's practice and from subsequent related interaction.

Opportunities for learning in this way, particularly in context and at various levels of development, are quite unique.

8.2.4: Pre-service and in-service teacher education (Teacher Professional Development)

There was a broad continuum encompassing all stages of teacher development in the sessions that were aimed at launching local Children's University involvement of specified schools. This ranged from teacher education students, who had only very recently commenced their courses, through class teachers and headteachers with varying years of service and experience, to the university tutor who was a former teacher having given fourteen years of service in schools prior to becoming a teacher educator.

The teacher education students, who may also be rightly classified as pre-service teachers, may be considered as possessing professional identities that

were in the very early stages of being developed. Students interviewed in this study stressed that one reason for their participation was to gain experience in schools earlier than would have been the case in the normal timetabling of their course. They take up their course of study because they are hungry to be teachers and to gain practical experience. The university tutor was able to arrange that experience through local Children's University activity. The tutor was also on hand to act as a mediator between students and teachers to help ease the students' transition from school pupil to pre-service teacher such that they were not immediately 'in at the deep end'. In addition, the tutor was able to model good practice in terms of professional relationships when engaging with teachers and also in terms of observed pedagogy in the classroom context. Students told the tutor that it 'it gave you [the tutor] credibility' and that 'it was good to see you [the tutor] teach'. This situation would hopefully have a positive impact on student retention on the course.

The students may begin their course with personal, possibly somewhat idealistic, preconceived notions of what makes a 'good teacher' or 'the type of teacher that they would like to be'. The teachers that they engage with as part of the local Children's University are ostensibly free of the day-to-day pressures of teaching, as is the university tutor. The situation is less formal. There is no assessment of students' practice so any hierarchical stance, on the part of teachers or tutor, is diluted. The tutor has been brave enough to have his practice scrutinised, warts and all, so that there can be professional analytical dialogue between students, teachers and tutor in the midst of the teaching and learning context.

The teachers encountered in the various schools were at various stages of their career. Consequently they will have had varying degrees of experience in terms of age group taught, type of school and length of service and will probably have shaped different professional identities.

The central feature to this was the pedagogy exhibited by the university tutor. This aspect was afforded the greatest number of references by interviewees who described it as 'inspirational', 'creative' and 'hands-on' (see early references to this in interviews documented in Chapter 6). As a result the tutor was described by some teachers as an 'expert' (see interviews in Chapter 6) and some teacher education students deemed the tutor to be more 'credible' as

a consequence of witnessing this practice at first hand. Some teachers stated that they had learned new ideas and would reflect on, and adopt, such novel perspectives on pedagogy. Expertise in science was not the only area that was attractive to schools and Headteachers said that they would welcome input from University tutors with expertise in any curriculum area.

The context of these sessions, aimed at launching the local Children's University in participating schools, was such that there was learning taking place at different stages with the respective audiences and it was all achieved less formally. This manifested itself, in the case of the children, in child-centred learning that was more open-ended in nature. The children were still undertaking learning based on learning outcomes based in the National Curriculum but they were not overtly open to related assessment of their performance and to any stigma attached to that. Aspects of learning acquired by the teachers and the teacher education students were informal in nature and were based on observation of the practice of the university tutor. Although the opportunities to learn were planned there were no specified learning intentions and the professional learning (or development) that took place was personalised in that teachers and teacher education students identified aspects of value to them and reflected on the tutor's practice. In addition, the sessions allowed the teachers, by their own admission in some cases, to observe children in their classes from a different perspective as the pupils reacted to different pedagogical situations. Sessions provided teacher education students with additional opportunities to engage closely with children and to study the pupils' learning and development.

8.2.5: The children's learning

It has been seen that the participating children have been excited and motivated by engagement with this local Children's University. They have said that the sessions are 'fun', that 'there are lots of things to do' and that they like learning in a space other than the classroom. In addition to this the children, according to their teachers and their parents, like to take ownership of their learning through choosing their own extracurricular activity and the learning that they do away from school. This is coupled with the independence that they assume, again according to teachers and parents interviewed, in managing their Learning

Passports. The activity in this sense is voluntary and they can 'vote with their feet' in terms of whether or not the learning meets their needs.

In terms of the sessions organised by the University tutor and in which there is tutor input and student mentoring the children's sentiments seem to tie in with the fact that teachers are saying that sessions are 'innovative', 'practical', 'hands-on' and engaging even for the most reluctant learners. The root of such outcomes seems to be based in the creative pedagogy and relevant contexts that stimulate such engagement with learning by pupils. This may be further reinforced through the social interaction with student mentors who are able to scaffold the learning of pupils effectively principally as a result of a reduced adult: pupil ratio.

This situation may raise questions as to why the children might not receive such stimulating learning more extensively during their time in school. Firstly, classrooms do not have the luxury of such wide-ranging adult support as pupils generally learn under the guidance of their teacher and, if they are lucky, one or possibly two teaching assistants. Further to this, it seems that there may be times when teachers struggle to inspire the children in learning through lack of innovation in selecting stimulating contexts or applying appropriate pedagogy. The reasons for this are complex but it seems, in relation to some outcomes of this study, that there are two main issues. One aspect relates to Government Policy and the other element stems from teachers' training and continuing professional development.

The primary school teacher's role, as voiced by some of the teachers interviewed in the course of this study, is difficult and challenging. One reason is that they have to be a 'Jack of All Trades' in terms of the number and variety of roles that they have to undertake but particularly in the fact that they have to teach all subjects within the curriculum. This was observed by some teachers interviewed when they suggested that it was 'good to have an expert come in' to teach science and then intimated that they were not expert because they 'had to teach everything'. This issue is compounded by the fact that the National Curriculum is recognised as being 'overcrowded' (Alexander et al, 2010, p. 237) as well as, by definition of the fact that it is Government statute, prescriptive. Consequently, teachers are charged with a difficult challenge to address all aspects of the National Curriculum anyway but if they had to achieve full

coverage in a highly intensive way using creative pedagogy throughout then they may exhaust themselves and 'burn out'.

Teachers interviewed in the course of the study have welcomed the 'different perspectives', 'innovations', and 'ideas' that the University tutor used to inspire the children in local Children's University sessions. In a sense the teachers have been provided with contextualised continuing professional development in real time and have been able to evaluate its worth or impact on the children, whose learning needs and potential they know, by making observations and reflecting on outcomes.

There was great demand for science CPD provision in this way presumably because the teachers felt that they felt it was lacking in other provision. This may simply be due to a lack of awareness. Many teachers interviewed, for instance, were not aware of the National Network of Science Learning Centres that were the result of massive Government spending aimed at addressing science CPD for teachers. Similarly, the teachers were not aware of the Association for Science Education (ASE) which is the professional association supporting the professional development of teachers.

Whether this knowledge would have made any difference may be irrelevant firstly because teachers may follow their personal curricular interests, and these may not include science, by 'cherry picking' aspects that will help them address the overcrowded curriculum alluded to above. But in addition, as seen through interviews, these teachers access continuing professional development depending on the stage they are at in their career and the input they receive is largely generic or related to school policy, government policy and systems for example assessment, monitoring progress, risk assessment and safeguarding children. In short, subject-based CPD has suffered a decline. This is compounded by the ways in which teachers can access continuing professional development. Teachers interviewed as part of this study say that they are released for CPD by their Headteachers depending on their role of responsibility and hierarchy in terms of career in support of promotion prospects. For instance teachers vying for Deputy Headships or Headships may acquire CPD provision, of the type outlined above, to support career development. If anyone accesses subject-related CPD it is apparently the respective subject leader within the school. They are subsequently tasked with cascading down their learning to

colleagues at staff meetings in the form of In Service Training. This arrangement may be far from ideal for several reasons including the fact that the subject leader may act as a 'gatekeeper' of that knowledge or, even if they are effective teachers of children, they may not be effective teachers of adults. Such arrangements within schools, according to the focus teachers, are patchy and this is allied to the provision at differing career stages, for instance at transition from teacher education student to newly qualified teacher.

8.2.6: Increasing children's aspirations and engagement

Firstly, a learning experience within this local Children's University inspires the children to enjoy their learning thus raising their aspirations, increasing motivation and has a positive effect on behaviour that is more marked for children previously identified as disengaged as learners.

8.3: Summary

Section 8.2 above provided an overview of the central theory generated through the research. Chapter 6 described some of the identified needs of stakeholders participating in the formation of the local Children's University and some of these are highlighted in Table 13. Consideration of these categories prompted a shift in focus and informed a modified in-depth study, as outlined in Chapter 7, resulting in exploration of key elements of this theory. This, in turn, resulted in an opportunity to examine not just the needs, benefits or drivers for participation in this local Children's University but to derive possible reasons underpinning or influencing those needs. The current Chapter provides discussion based on identification of the possible reasons behind stakeholders' motivation to be involved in the local Children's University. The following Chapter will consider substantive literature related to key elements of the theoretical model and this, as described above, may act as an additional data which, in turn, may impact on the initial model portrayed in Figure 9 and prompt reflection on its possible development.

Chapter 9: A review of relevant literature

9.1: Introduction

We have seen aspects of an underlying feature of Grounded Theory Methodology that are linked to the condition that any resultant theory must emerge from the data analysed. A further feature is that the Review of relevant literature is conducted after the collection of data, its subsequent analysis and the resulting construction of theory.

Creswell (2009) recommends that the Literature Review, in Grounded Theory Methodology, is situated at the end of the study such that it uses the literature inductively. The literature may be used to compare and contrast with the results, the themes, categories or theories that emerge during the research study itself (Creswell, 2009). Glaser and Holton (2004, p. 46) assert that 'it is critical in GT methodology to avoid unduly influencing the pre-conceptualisation of the research through extensive reading in the substantive area'. The researcher, in paying homage to this, is able to retain theoretical sensitivity to any data collected and to avoid the polluting of that data with ideas derived from a review of literature.

This further minimizes the impact that prior knowledge may have had on influencing the emerging theory in much the same way as issues such as researcher positionality (as described earlier in Sections 4.1 and 4.2). An avoidance of any consultation of literature is, at first thought, perhaps easier to achieve than the latter feature of researcher positionality. There must be a similar awareness or reflexivity on the part of the researcher. In essence, the researcher must be entirely satisfied that theoretical saturation has been achieved and that a substantive theory has been isolated.

Charmaz (2006, p. 163) claims, when talking about the researcher using Grounded Theory Methodology, that the 'literature review and theoretical frameworks are ideological sites in which you claim, locate, evaluate and defend your position'. She goes on to suggest that the Literature Review should be drafted in relation to the Grounded Theory that has emerged from data. Charmaz (2006, p. 166) also intimates that the Literature Review can 'set the stage' for subsequent chapters. This is the intention of the researcher for this current Literature Review.

There was a range of categories emerging from the analysis of data collected from stakeholders involved in the formation of the local Children's University (CU). These categories were aspiration, community, pedagogy, expertise, learning environment, employability, government policy, university hierarchical systems and the unique nature of this local CU. This Review of Literature is intended to provide a context for subsequent, in-depth discussion of these categories informing the core theory identified.

9.2: The unique nature of this local Children's University

Reference to this feature was made in Section 7.2.5 and 8.2.1. There does not appear to be anything in literature that describes a situation where University tutors, teachers, teacher education students and children are working together on a regular basis in a 'real time' context. In that sense this situation is unique. Some local Children's Universities have mentors who support the children from time to time. These individuals may include parents, school governors or professionals from industry. The collaboration between educationalists of the three types indicated above appears to be fairly original. This unique situation does have some bearing on discussion of such professional collaboration as found in Section 9.5.2 particularly the work of Campbell and Kane (1996).

9.3: The local Children's University as an element of a Complex Adaptive System.

The local Children's University, Government Policy and university hierarchical systems or policy are key areas influencing what is a complex system. It has been seen that the formation of a local Children's University is a complex development in itself. We have seen earlier, in Chapters 1 and 5, that there are many stakeholders involved and that they are both human (both individuals and groups of varying size) and non-human (for instance in the form of agencies and organisations). Furthermore, the development of the Children's University itself takes place over time and the various actions of the stakeholders may impact on this development to varying degrees and over differing timescales. This was outlined, via the work of Pisek and Greenhalgh (2001), in Chapter 2 in trying to further justify the selection of an appropriate methodology.

This complex situation is multiplied many times over when it is considered that the initiative is being established as one small feature within what might be

called the ecosystem of education as a whole. It is worthwhile, therefore, to examine the nature of such Complex Adaptive Systems generally and then more specifically in relation to the world of education.

Byrne (1998, p 20) defines the situation within a Complex Adaptive System when stating that:

The issue is that in the social world, and in much of reality..., causation is complex. Outcomes are determined not by single causes but by multiple causes, and these causes may, and usually do, interact in a non-additive fashion. In other words the combined effect is not necessarily the sum of the separate effects. It may be greater or less, because factors can reinforce or cancel each other out in non-linear ways.

Lemke and Sabelli (2008, p 123) suggest that 'complex system models are designed to model change and dynamics, especially qualitative change: the emergence of new social networks, changes in daily routines or actor preferences'. They make a key point when stating 'we will need to know not just what people do but why they do it, how they might imagine things being different, or what they would really like to do' (Lemke and Sabelli, 2008, p 123)

Mason (2008) draws comparisons between chaos theory, as met in the world of science, with complexity theory inherent in Complex Adaptive Systems. The problem usually faced by the researcher is that the initial conditions are not predictable and, furthermore, related events or intentions being sensitive to these conditions may develop in a positive or negative sense in a resultant unpredictable manner (Mason, 2008). These 'conditions can grow inexorably and cause substantial fluctuations in the behaviour of a particular phenomenon' and are concerned 'with wholes, with large systems and environments and the relationships between their constituent elements or agents' (Mason, 2008, p 36), Morrison (2002, p 6) assesses the situation succinctly when saying that it is 'a theory of survival, evolution, development and adaptation' as the various elements interact.

Mason (2008) points out that the agents acting in the complexity of an educational system include teachers, students, parents and community leaders, the state and education departments. He talks about intervention in each of these areas being necessary to drive change in education and that, conversely, it does not rely on making an impact in one of these areas to produce change no matter what the size of the impact. Summarising, 'it is more a case of

generating momentum in a new direction by attention to as many factors as possible' (Mason, 2008, p 44).

The problem faced is that initially it is sometimes difficult to identify agents or in this case stakeholders in the formation of a local Children's University. Mason (2008) observes that it is also difficult to quantify the importance of a specific factor or identify its influence on aspects of the Complex Adaptive System in order that we may assess its importance. Crucially, he suggests that this is 'because various factors compound each other's effects in ways that both increase and diminish their aggregate influence' (Mason, 2008, p 45).

With this aspect in mind, it is worth considering the observations made by Lemke and Sabelli (2008). They make comparisons between static and dynamic assessments of elements of an education environment or system by considering the different hierarchical levels of constituent parts. Lemke and Sabelli (2008) suggest that the more static assessments concern statistical features such as teacher qualifications or budgets. The more dynamic assessments relate to the 'differing timescales at which different levels of the system function' (ibid., p 121).

Lemke and Sabelli (2008, p 125) point out that changes 'begin locally and then face the problem of 'scaling out' ... or 'scaling up'...'. In the case of the former they provide an example of considering one teacher and moving on to consider all teachers in a school. With 'scaling up' they mean, for example, moving from a small-scale system such as a small cluster of schools to a larger system such as all schools in the region or in the country. Importantly, they say (ibid., p 126) that when a system is undergoing these developments there is 'no guarantee that it will maintain validity with respect to its fundamental principles or goals'.

This situation describes the evolution of this local Children's University very succinctly. It started with a personal communication between the researcher and a headteacher who was the friend of a colleague. The headteacher's school became the first to participate in the pilot study. Collaboration with this school proved most successful. As seen in Chapter 6, collaboration with other teachers and other schools was not consistent in terms of the quality of the outcomes. Lemke and Sabelli offer some possible overarching reasons for this.

Within their paper Lemke and Sabelli (2008) offer suggestions for a new research agenda for using the study of complex systems in order to analyse changes in educational systems. In so doing they pose many questions to stimulate reflection in this area. Key questions include:

How do the changing priorities, populations and problems of a local community influence the larger educational system's agendas? (ibid., p 121)

How do learning events in a laboratory or at a computer workstation and those in classrooms and hallways and cafeterias add up to a coherent longer-term process of educational development? (ibid., p 121)

How is educational change constrained by resource limitations, standardised curricula and testing? (ibid., 2008, p 122)

How is educational change enabled or made possible by bringing new kinds of people into contact with one another? (ibid, p 122)

These questions resonated with some of the emerging features of this study of a local CU and will be explored in Chapter 10.

Further to this, specifically in relation to the recurring science theme apparent in activity within this local CU, the need for change in relation to STEM capacity in educating learners in the areas of Science, Technology, Engineering and Maths is highlighted in a report by the Education Commission of the States (2011, p 1) where they state that:

all along the pipeline – from the quality of science instruction in the early grades, to the performance of high school seniors on international tests, to the content and rigor of teacher education programs in the nation's colleges and universities – signs of weakness and deterioration exist.

Stephens and Richey (2011) of the Boeing Company suggest that much research in the area of science and engineering has been concerned with learning and teaching in formal settings. They draw attention to more recent research (Bell, Shouse, Lewenstein and Feder, 2009; Bransford et al, 2005) in which informal as well as formal approaches are given attention albeit in relation to learning in the workplace. Informal approaches to learning are considered in the following section 9.2 but they are highlighted here as they add to the myriad of social interactions prevalent in a complex adaptive system that is a learning environment. Miller and Page (2007) echo the thinking of Mason (2008) and Lemke and Sabelli (2008) above in that such systems are embedded in sub-systems and that such elements are manifest over many timescales to produce outcomes that are often hidden or are difficult to measure. Stephens and Richey (2011) point out that any change is influenced by physical and social factors

including the issue of competing interests. There is a tendency for individuals and groups within the system to operate within their immediate, relevant boundaries rather than engage with the complexity of the system (Stephens and Richey, 2011). However, there are elements of complex systems that confound logic or intuition and one goal suggested by Stephens and Richey (2011, p. 420) is to identify 'the multiplicative effects of educational stakeholders who impact the equilibrium of the system, including perceived boundaries between policy, research, community and practice'.

Davis and Sumara (2010, pp. 856-7) also highlight the 'nested processes' played out within complex systems and suggest that this is particularly apparent in education due to its 'simultaneous concerns its cognitive development, social coherence, cultural renewal and ecological sustainability'. On reflection, Davis and Sumara (2010, p. 857) go on to say that study of such complex adaptive systems allows for 'rethinking the pragmatics of teaching'. They consider, in this paper, the specifics of learning events that comprise one small complex system nested alongside others within a large dynamic complex system. These learning events will be considered in more detail in the following section 9.4 but it is worth signalling here their place within complex systems because, as with many such elements, they are party to simultaneity that Davis and Sumara (2010, p. 857) say 'refers to events or phenomena that exist or operate at the same time'. Davis and Sumara (2010) draw a distinction between simultaneity and discontinuity in relation to such factors as theory and practice or child and curriculum. Popular debate suggests that such terms are distinct or unconnected even though they take place at the same time but they do not exist in balance and 'co-emerge in harmony' (Davis and Sumara, p. 858). Morrison draws a distinction between commonly accepted cause and effect models of educational change and those associated with complexity theory. The former possess linear predictability and a fragmented approach to understanding events whereas complex systems comprise non-linear approaches that are often unpredictable and are crucially concerned with relationships within the system (Morrison, 2006).

A central component of the system of this local CU was the relationships between teacher, student teacher and pupil stakeholders during sessions. Data

showed that the pedagogy applied by the university tutor in some of the sessions was key and this aspect is discussed in the following section.

9.4: The pedagogy employed by the university tutor (informal education – teachers, students, children)

Stakeholders observed that the approach to teaching and learning was exemplified by inspirational, creative and informal pedagogy. Teachers highlighted the role of teacher education students, as mentors to pupils, as an important part of the success of a Children's University learning experience. Previous literature associated with this less formal approach to learning is reviewed below.

This researcher prefers use of the term acquisition in relation to learning within the context of the Children's University process. This is because, firstly, the Children's University activity is not systematic instruction and, secondly, it is hoped that the learner acquires skills and knowledge largely through experience. The definition of learning proposes that skills and knowledge can be taught. Again, the researcher advocates that the term teaching can be replaced with other terms such as facilitation in order to distance the Children's University pedagogy from embodying a didactic flavour.

Student and teacher stakeholders have observed that the Children's University process is a form of informal learning. This suggests that it is not formal learning. Again it is worthwhile exploring the definition of each. Eraut (2000, p12) outlines both when suggesting that 'informal learning is often treated as a residual category to describe any type of learning which does not take place within, or follow from, a formally organised learning programme or event'. He goes on to say that the term informal can be misleading in that it could infer other features of a learning activity such as dress, discourse or behaviour. Eraut (2000, p12) prefers the term non-formal learning. In other words it is remote from the actual process of formal learning. Formal learning, he suggests, is a prescribed package or event with a designated teacher that may result in an award. Further to this, Hart et al (2004 p3) describe a type of learning that they call 'learning without limits'. They suggest that the learning that is widely seen in our schools is heavily linked to ability and subsequent judgements, in the form of reports or grades or comments, which are prone to label the learner.

They say that ‘learning without limits becomes possible when young people’s school experiences are not organised and structured on the basis of judgements of ability’ (Hart et al, 2004, p3).

Pettenati and Ranieri (2006) concur that formal learning takes place in an organised and structured setting and gives formal education as an example. They say that non-formal learning is part of planned activity that is not explicitly designated as learning. As with formal learning it is intentional from the learner’s perspective. Informal learning is commensurate with experiential learning and ‘in most cases it is non-intentional (or incidental/random)’ (Pettenati and Ranieri, 2006, p. 2).

Jefferies and Smith (2005) also use the term non-formal learning. They describe it (Jefferies and Smith, 2005, p. 81) through its association with a continuum (see Fig. 10). Conversation, say Jefferies and Smith (2005), is at the heart of what informal educators do, hence ‘a’ in Figure 10, which may therefore be considered ‘pure’ informal education. The same writers suggest that informal educators may also resort to the features labelled ‘b’ in which a negotiated curriculum is undertaken in the form of, for instance, groups, projects or residential. Furthermore, Jefferies and Smith (2005, p. 81) state that ‘informal educators can and must employ more formal approaches from time to time’. Thus, in this latter instance, we have the set curriculum identified as ‘c’ in the continuum. Importantly, Jefferies and Smith (2005, p. 82) assert that non-formal educators operate in zone ‘b’ in the continuum because of their pursuit of “bottom up’ or negotiated curriculum building.

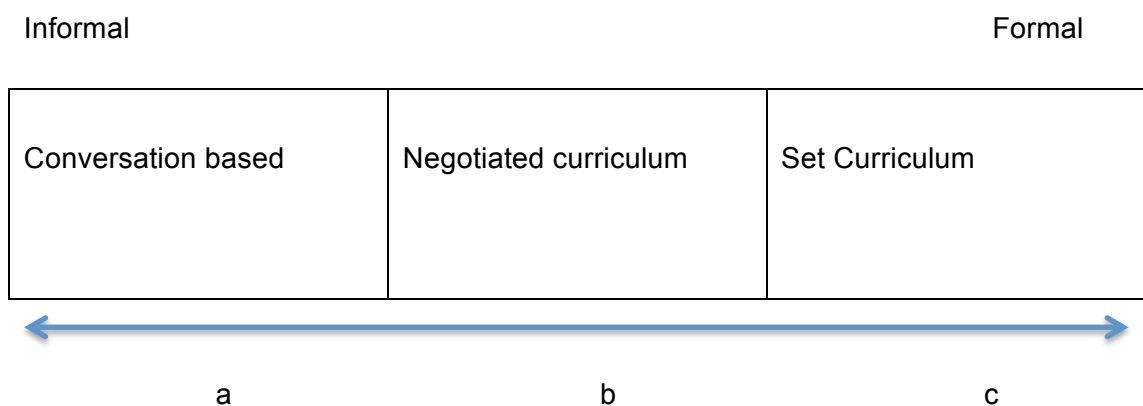


Fig 10: An Informal-Formal Learning Continuum

Informal education is driven by conversation and process (Jeffs and Smith, 2005). The conversation is unilateral where learners wait for opportunities to input and thus shape the direction of their learning. The situation is learner-centred. This is obviously different to the situation found in formal settings where the learners wait for direction from a more experienced learner, often the teacher. Furthermore, say Jeffs and Smith (2005), for formal educators the process of education is determined by others. It can be very prescriptive as, for example, with the National Literacy Strategy (DfEE, 1998) where teachers were told what to teach and how to teach it. It is hoped that learners will acquire the pre-determined product, namely the curriculum content. Unfortunately, not all learners achieve this. The problem for informal educators is that the learning process is unpredictable. Conversations can take different directions so that the products of learning can often not be pre-determined. This is the challenge for informal education.

These sentiments were highlighted by Raths (1971) in a paper examining teaching without specific objectives. He argued that education faces a problem between either applying disciplined teaching to achieve changes in behaviour of students in order to comply with pre-set objectives or allowing the learner the freedom to make choices. Raths postulated twelve value statements against which the success of learning activities may be measured. These include allowing children to make informed choices, to be active and enquiring learners by engaging with real problems or issues by applying skills in new contexts, to take risks with the notion of success or failure in following their own interests and to share the planning and execution of a plan.

Interestingly, one of Raths' value statements argues the case that children of different ability levels should be able to accomplish learning activities successfully. In a sense it depends on how one defines success but irrespective of this, teachers often have great difficulty in differentiating tasks, set against pre-set National Curriculum learning objectives, for children of different ability.

Raths argues that schools should employ a blend of activities that are objective-led and those that do not have specified objectives. The problem is in measuring or justifying the latter and this is where he suggests considering his value statements.

There is great value in the learner-centred approaches found in informal or non-formal learning situations. Reduced emphasis on curriculum allows the educator and learner to 'go with the flow' and to explore emotions and experiences in greater depth (Smith, 2006). It is interesting to note that such encounters take place on a voluntary basis on the part of the learner. There is no compulsion for them to interact in the way that they do (Smith 2006). This is not the case in more formal school settings where conversations are commonly steered by the teacher as he or she works towards the goals determined by the particular aspect or curriculum focus. As will be seen later, in Section 9.4, the lack of rigid emphasis on curriculum 'removes a hiding place for educators. Instead of seeking to transmit information, they have to engage with situations and with people – and this inevitably throws their character into spotlight' (Smith, 2006, p. 16). In other words the educator's professional identity becomes an important entity.

It is prudent, at this point to offer a brief summary of informal, non-formal and formal learning. The former is exemplified by the type of learning that is undertaken in everyday life and, perhaps, underpins the term lifelong learning. Non-formal learning is, as we have seen above, typified by organised activity outside of a pre-determined curriculum. Formal learning is that which is organised within schools and similar institutions and adheres to a structured, pre-determined curriculum.

Marsick and Watkins (2001) offer a further perspective by contrasting formal learning with informal and incidental learning. They suggest that formal learning is classroom-based and highly structured whereas informal learning, although it can take place in institutions, does not usually conform to these constraints. They suggest that 'informal learning is usually intentional but not highly structured. Examples include self-directed learning, networking, coaching, mentoring...' (Marsick and Watkins, 2011, p. 25). Marsick and Volpe (1999) provide some characteristics of informal learning that include the fact that it is not highly conscious, that it is associated with the learning of others and that it commences as a result of some trigger. Marsick and Watkins (2001) say that factors related to the context have a bearing on the ability to learn well. Their list includes availability of resources (time, money, people from whom to learn) and motivation.

A research brief for the DfEE (2000, p. 2) suggest that the ‘trigger’ or initiating conditions mentioned above can take three forms. These are: that it can be a result of an effort by ‘movers and shakers’ or ‘learning entrepreneurs’; that it is the result of a broader social movement; that it could be due to a programme based on a defined policy agenda. These agendas have a tendency to be broad and the loosely organised. Consequently there is much scope for development and change through an evolutionary process (DfEE, 2000). The report intimates that one of the reasons why individuals engage with learning informally, once the environment has been created, is because it is something new or innovative. There are barriers to facilitation of informal learning. These may be societal due to inflexibility of policy, lack of integration with more formal programmes or inadequate funding (DfEE, 2000). Furthermore, at a community level there may be mistrust of learning providers or imposition of ‘top down’ learning agendas (DfEE, 2000). The report goes on to say that individuals may not engage with activities informally due to negative prior learning experiences, because of lack of accreditation or because of poor support while learning.

Crucially, the report (DfEE, 2000) suggests that informal learning allows individual learners to ‘re-package’ themselves as learners and to increase their self-confidence and social skills. Conversely, it is said that these features, however important, do not permit the learner to acquire access to real, accepted opportunity structures (DfEE, 2000). These may include formal accreditation or qualifications.

Stephens and Richey (2011) drew attention to the need to take full account of informal learning and its value in any learning situation or context. Their association with the Boeing Company necessitates that they pay greater attention to the workplace as an ideal context for formal and informal learning to flourish in tandem. Crucially, Stephens and Richey (2011, p. 418) suggest that ‘the classroom and the workplace are where innovation and cross-fertilisation can best occur for the mutual betterment of learners, communities and businesses’. Academia and business partnerships, say Stephens and Richey, can have a great impact on educational ecosystems by integrating learning theory with situated environments and demonstrating proven methods through peer-reviewed educational networks. Boeing advocated a Learning Laboratory (Stephens and Richey, 2011) that upheld the principle that people learn both

formally and informally with social impact on learning extending to community and parents and informing educational structure and policy. Such an approach involved innovative practice such as 'just in time' coaching and personalised learning through 'semantic networking of distributive expertise' (ibid., p. 419).

Lave and Wenger (1991) argue that we should not specify such distinct labels as formal and informal learning. They suggest that it is difficult to argue that learning can take place in the absence of teaching. This is one observation among the many that comprise the complex features of a learning experience. In today's qualification-driven society it appears that the value of informal learning is overlooked. Coffield (2000) says that this must be remedied and that informal learning should be part of the plans for a learning society. He intimates that we value what we learn informally from friends and colleagues more than aspects acquired from teachers or tutors. This may be because we are more motivated. This motivation, in turn, must be harnessed with the result that informal learning will complement formal learning.

It is being recognised that educational systems in some countries are not able to cater for the needs of learners that will enable them to become citizens that are able to function effectively in an ever changing, complex world. The network of formal institutions are having change imposed on them as a matter of course but they are also flirting voluntarily with a range of projects and initiatives that aim to support them in making progress towards targets set by government agencies and the needs of their learners. This has been noted by Lemke et al (NECSI, 1999) who suggest that such projects may add to the complexity of the system by saying 'many individual educational projects aim to contribute at various levels to overall systemic reform, but we need to find ways to better understand how these projects may interact with one another and with the existing educational system as a whole'. The report for NECSI (1999) intimates that, in analysing such a dynamic system, we need to identify which components of the system are closely enough involved to be able to be included in the system. This may be misleading because it is difficult to predict, at a given time, what impact a feature may have in the future of the system.

Furthermore, the NECSI Working Group 3 Report (1999), produced by Lemke et al., suggests that the American educational system possesses incidences in which schooling isolates children and teachers from the wider community. The

report states that learners are not given the opportunity for assuming responsibility or for making real contributions to their community. This may inhibit learners' social development due to the tendency for teachers to be prevented from sustained professional liaison with other teachers by the structures of systems within their school and in the schools of colleagues. Interestingly, the report poses some pertinent questions about the changing roles of participants within an educational system, in how those roles may be defined and about the kinds of people undertaking roles.

A teaching and learning situation within a Children's University session is, in essence, one microscopic element of a much greater Complex Adaptive System. Even within that situation there is a sub-system of even smaller interconnected features. Some appear immediately significant whereas others are initially deemed to have trivial importance. This is partly because their impact is sometimes difficult to identify, define or quantify and partly because the degree of any impact may occur over a substantial length of time. Indeed, if any outcome does eventually materialise it may not be attributed to an intervention that now lies deep in the memory. One such phenomenon is identified by Davis and Sumara (2010, p. 857) and is termed the 'pedagogical moment'. They define it as an event that may present a possibility or possibilities that may not occur 'at other times or under different circumstances'. If it is considered that such pedagogical moments exist as part of a complex adaptive system then it must also be considered that there are other 'moments' that occur in these formal educational environments (Davis and Sumara, 2010).

The issue of teachable moments, particularly within informal settings, can be explored further when considered as part of the 'zone of complexity' offered by Stacey (1996) which was visualised in a model by Bore and Wright (2009) which is reproduced in Figure 11 below. In considering this it may be postulated that the incidence of teachable moments may be multiplied, within less formal local Children's University sessions, as a result of the teacher and the learners' willingness to take more risks at such points. In other words they are willing to move from region 1, in Figure 11, into region 2, the zone of complexity. The more open, informal, relaxed and learner-centred setting of a local Children's University setting may support this situation.

Wellington and Ireson (2012) compare formal and informal learning in discussions focusing on aspects of the learning of science. Wellington and Ireson agree with many of the features identified by researchers above but also draw attention to the social aspect of informal learning and suggest that this is central to what they intimate is a learner-led approach.

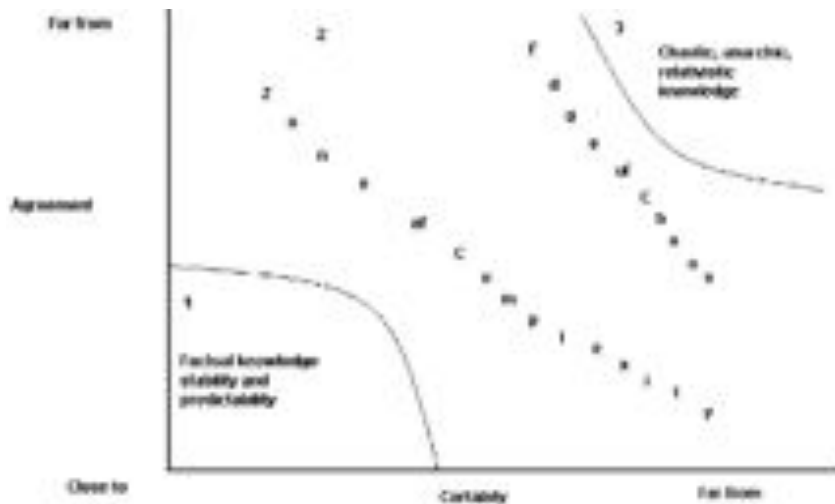


Figure 11: The Zone of Complexity and the Edge of Chaos (after Stacey 1996)

Wellington and Ireson (2012) state that formal learning often takes place in the context of a curriculum and that this is a compulsory situation whereas informal learning is voluntary and less structured. Further to this latter point, Wellington and Ireson (2012) suggest that informal learning, as a result, is spontaneous, learner-led and open-ended but that conversely it manifests the drawbacks of being unpredictable and lacking planned direction. A key statement is that ‘informal and undirected learning in science will be of increasing importance – the so-called ICT revolution will ensure this. Learning will take place in a variety of contexts...’ (ibid., p. 283).

Furthermore, Wellington and Ireson (2012, p. 283) assert that ‘the realm of informal learning in science is an under-used and under-studied area. If we knew more about it, or simply took more notice of it, children’s science education would be greatly enhanced’.

The DfES had recognised the need for teacher professional development in science. Consequently, it would appear that children’s learning of science might suffer as a result if these needs were not met.

Mirroring the need identified in the UK, Fenichel and Schweingruber (2010, p. 188) identified the huge investment by the National Science Foundation (NSF), in the USA, in investigating the connection between formal and informal science learning. The largest project was the 'Learning in Informal and Formal Environments' (LIFE) initiative conducted at a designated Centre. The project brought together leading research experts from fields of the science disciplines and science learning. These researchers explored several areas. They investigated the neural processes involved in cognitive, linguistic and social learning. They also focused on informal learning in science, technology, engineering and maths (STEM) in settings that promoted learning outside of schools. Furthermore, the project looked into designs for formal learning that measured how learning in one setting might be transferred to another.

The NSF also funded the Academies for Young Scientists (AYS) initiative that aimed to promote interest and excitement in STEM activity amongst children up to fourteen years old (K-8). It was based on out of school learning with input from formal and informal providers including those from Colleges of Education and the private sector. The activities aimed to provide learning experiences that were synergistic with the normal school curriculum.

These initiatives exemplify the situation identified by Lemke and Sabelli and also Davis and Sumara as discussed in Section 9.1 earlier in that there is interplay between large organisational policy and local community need. The approaches in the USA place a major emphasis on informal learning compared to the courses on offer to teachers in the UK. It is also interesting that the USA initiatives incorporated provision by Colleges of Education, a situation similar to the context of this local CU.

The NSF supported a Learning and Youth Research and Evaluation Centre (LYREC) that assessed the effectiveness of the various models identified above. LYREC comprised several collaborators including Harvard University and King's College, London. This centre supplemented the work of the Centre for Informal Learning and Schools (CILS). CILS researched informal learning and the relationship between informal science institutions (the Exploratorium Museum of science, art and perception in San Francisco is a collaborator) and schools. Other contributors include the University of California and King's College, London. The centre offered professional development for informal

science educators so that the latter could support teachers in schools. The centre aimed to promote links between informal learning settings and schools for the benefit of learners up to eighteen years old (K-12).

The NSF also funded the Centre for Inquiry in Science Teaching and Learning (CISTL) that researched implementation of inquiry-based learning in schools. The Centre brought together three informal science institutions, two universities, a community college system and the Association of Science-Technology Centres.

It was highlighted earlier in this section that one of the issues with teacher professional development was that it does not meet the needs of individual teachers at a local level. The NSF appeared to recognise this as seen below.

The NSF also funded much smaller projects such as the Informal Learning and Science in Afterschool initiative (ILSA). ILSA investigated the infrastructure and impact of learner participation in afterschool provision. That provision was labelled science learning in 'typical' (Fenichel and Schweingruber, 2010, p. 190) non-science-specific activity. Such cross-curricular, learner-centred activity was prevalent in CU sessions.

Importantly, ILSA was part of the Program in Education, Afterschool and Resilience (PEAR) which explored the 'recognition that high-quality afterschool programs hold the promise of building resiliency and preventing high-risk behaviour in youth, as well as contributing to school success' (Fenichel and Schweingruber, 2010, p.190). PEAR has a website (www.pearweb.org) that contains proven learning programmes, methodologies and resources.

Each of the above initiatives is based on research-informed practice that explores the interface between formal and informal learning.

One project that did take notice of it, in a practical sense, was initiated at James Cook University School of Education that created an online learning environment called BirdNet in 2007. In this project, pre-service teachers worked with teachers and schoolchildren to develop environmental science learning activities (based on the study of birds) some of which were posted on websites produced by these partners in learning. Hickey and Whitehouse (2010) found that the project fostered creativity and motivation within the learners. Hickey and

Whitehouse (2010, p. 129) state that 'informal learning opportunities proved to be most effective for achieving professional growth outcomes for pre-service teachers'. The learning experiences of these pre-service teachers were driven by themselves and thus the approach was learner-centred and open-ended. As a result Hickey and Whitehouse (2010, p. 130) noted that 'when we, as teacher educators, remained open and responsive to the different ways and means through which pre-service teachers engaged with BirdNet, opportunities for informal learning multiplied' and that 'pre-service teachers learned the skills they needed *in situ*'.

BirdNet, then, is both an environment and a resource for learning. It is used in an informal way. These features will be explored in the context of available literature.

9.5: Pre-service and in-service teacher education (Teacher Professional Development)

Teacher professional development describes a continuum of professional practice that spans the whole of a teacher's career. It can be divided into two main stages that occur pre-service and in-service. These stages are considered below.

9.5.1: Pre-service experience of teacher education students

A major category emerging from data concerns teacher expertise, especially in relation to pedagogy. This was explored in more detail in Section 9.4 (above) but it would seem worthwhile exploring how this expertise is developed as a teacher shapes professional identity through pre-service, into fully qualified practice and during later career. The pre-service development of teachers, principally as students, and the in-service professional development of teachers (discussed later) are linked to employability of those individuals in terms of development of skills, knowledge and professional identity.

There is a long history of problems associated with the preparation of teachers to be able to fulfil their role in schools. Those problems lie not only in the programmes laid down by schools or colleges of education, namely in the pre-service education of teachers, but also in provision for qualified teachers' professional development. The local Children's University provides an

opportunity for teacher education students to acquire additional experience in schools. This experience is different to that which is encountered during their course as a norm. For instance, they have the opportunity to observe their tutor teaching children in a school setting. They also engage with children in a less formal way. Reflections on the situations that these teacher education students encounter through Children's University participation allow them to form different perspectives on education. The following elements of this section will specifically focus on those issues.

9.5.2: Teacher education students' experiences before and during their university course

Let us explore the needs of beginning teachers or student teachers. Do they derive similar benefits, in terms of professional development, to their more experienced colleagues? It can be argued that their need is greater. Unlike with many professions, the transition from student to fully responsible teacher is rapid. Lortie (2002, p59) says that such 'abruptness' means that an individual is 'a student in June and a fully responsible teacher in September.' Although such practitioners are assigned mentors who oversee their initial progress, it has been described as a 'sink or swim' situation (Lortie, 2002, p60).

Professional identity is a complex entity but may be defined in terms of how the teacher views himself, or herself, as a professional practitioner (Vähäsantanen, 2008). This is a dynamic entity because it involves such things as commitment, philosophy of education and sense of belonging (Beijaard, Meijer and Verloop 2004; Day, Elliot and Kington 2005; Little and Bartlett 2002). Furthermore, it is shaped by the teacher's perceived future professional identity or aspirations (Beijaard et al, 2004). It has been argued that professional identity is influenced by a teacher's self-image, their interests and factors that are important to them. Thus these features of professional identity may vary depending on features such as the stage of the teacher's career development and on the institution in which they are working. Therefore it may be different for pre-service, beginning and experienced teachers. 'A professional identity is not a fixed characteristic and is never complete' (Vloet, 2009, p. 69). It may be said that pre-service teachers, or teacher education students, possess an idealist perspective on the practice of teaching.

Teachers' ability to develop a professional identity may be influenced by the context of the workplace. This may be through, amongst other factors, the extent of their collaboration with colleagues, their motivation and the organizational culture within which they work. In the case of the latter, for example, it could involve the degree of freedom that they are allowed in developing as professionals in terms of being active practitioners. They can be active in planning their own development or they may be required to develop in response to the needs of the organization or drivers such as external government policy.

Lortie (2002) identified many factors that influenced an individual to want to enter the teaching profession. These included a desire to work with young people, a desire to be of service to society, favourable working conditions and holiday entitlement and what he called a feature of continuation. This alluded to the notion that some prospective entrants enjoyed their time in school as learners, having been taught by effective role models, and wanted to continue in that setting. Lortie (2002) also drew attention to the fact that some people entered teaching as a second choice because of unfavourable employability constraints rendering their first career choice unachievable. Interestingly, Lortie (2002) raises the issue, which relates to the former two features above, that people will enter the profession if they are happy with the educational system as it stands. This infers that there will be a dearth of people who want to make a difference in the sense that they will strategically influence change rather than maintain the status quo.

Lortie (2002, p. 59) suggests that the education of prospective teachers, in what he calls 'mediated entry', is not uniform in quality compared with other professions. He intimates that the situation is one in which apprenticeship is accomplished through a series of increasingly complex stages. These involve the student observing the teaching of experienced practitioners followed by opportunity to practise in the classroom. This practical experience in schools is coupled with educational study at University or College. The quality of the learning outcomes of both of these elements is dependent on several factors. These include the degree of expertise of both teacher mentors and tutors plus the attributes of the actual school practice setting.

Lortie's research (2002) suggested that the professional teacher education courses carried out on campus were rather sterile and distant from what happened in the classroom. There is further evidence (Lortie, 2002) to show that teacher education students place, above all else, great value on the practical experience gained during placement in school. In undertaking this experience, students have their first sustained interactions with a teaching body that possesses a complex range of professional identities.

The professional identity of the teacher education student or pre-service teacher is in its early stages of development. It is emerging. This formation begins as a result of the student's reflection on their reasons for wanting to become a teacher as identified above. Identity formation is further developed when, in the United Kingdom, potential students undertake small-scale voluntary work in schools prior to their acceptance onto a formal course of study. The students then undertake placements in a range of school-types through which their professional identity will be shaped further before they finally take up their first post of employment.

It can be seen that formation of professional identity is subject to a varied range of social interactions in a series of specific contexts. This is borne out in the literature. Winslade (2002, p. 35) described them as 'self-descriptions' whereas Hull and Greeno (2006) suggested that professional identity was an amalgam that included interpersonal identities, which were developed over time by interaction in a given context and could be coupled with epistemic identities where a person's increasing expertise and understanding is related to the subject matter and content of activities. De Ruyter and Conroy (2002, p. 11) felt that this socially constructed identity was particularly important for the teacher education student bearing in mind the number of schools experienced in the course of their study as outlined above. De Ruyter and Conroy (2002, p. 515) believe that identity is a coming together of the 'ideal person and professional image'. Coldron and Smith (1999) intimate that professional identity is how one sees oneself as a teacher but also how others see you. Furthermore, they point out that one is 'continually constructing a sustainable identity as a teacher' (ibid., p. 714). In the case of the pre-service teacher or student the aspect of sustainability poses many problems as they try to develop a professional identity. These problems arise from several issues including the wide variety of

contexts in which students are placed and the complexity of interactions therein with teachers of varying professional identity. In addition, the students may have uncertainties about their place in potential hierarchies of power. As Cattley (2007, p. 338) points out students may be required to make fine adjustments in developing their professional identities and will ask 'where and how do I they fit?'. It seems that some students will be amenable to change whereas others will not. This, in itself, is a complex situation. For instance, some people will be open to change and even be pro-active in the process if they see it will have benefits to a system. Others may have firm views based on their educational philosophy or belief and may adhere to those views and resist change. Others, still, may simply 'go with the flow'. In a sense, as Zembylas (2003, p. 113) says identity is 'self, never completed'. In other words one is always at a point on a continuum in pursuit of our professional identity.

Further to the above, Cattley (2007) points out that the pre-service teacher is in a vulnerable position. They enter their teaching practice with a 'fixed point in time' professional identity that may include idealistic notions of teaching and learning based on their limited prior experience. These teacher education students are subject to scrutiny by supervising teachers or mentors. The mentors feel obliged to offer feedback that may, in reality, be positive or negative. Often, it may be seen as negative because the teacher education student's perceptions may not fit with those of the mentor. The student may find themselves in a position, being inexperienced, where they will simply accept such criticism. The student's 'growing sense of professional identity could well be shaken' (ibid., p. 338). This, of course, may be further complicated as the student progresses from setting to setting. As Cattley (ibid., p. 338) points out:

Self-preservation ... is indeed an important requirement for a sustainable teacher identity. Pre-service teachers who choose to take risks in their pedagogies are particularly vulnerable if by doing so, their mentor teachers identify them as being out of tune with their own way of thinking. This could lead to self-doubt on the part of the pre-service teacher.

As indicated above, there may well be a resultant power struggle that may have detrimental effects to the student teacher's progress (Cattley, 2007) and maybe that of the mentor in terms of their professional development. There is a situation apparent here where the development of professional identity comprises a bridging of the gap between the identity experienced by a person at a given time and the identity ascribed to that person by others (Sfard and

Prusak, 2005). This goes against what (Vloet, 2009) says in trying to highlight the key traits of professional identity. Some of these concur with aspects such as interaction with others and with the context but Vloet (2009) suggests that individuals should be actively responsible for development of their own professional identity. In the case of relationships between student teacher and mentor there may be conflicting ideas that may inhibit students' choices and subsequent development.

Nevertheless, the role of the mentor is central to the development of the student teacher. Indeed, the mentoring role is critical in the professional practitioner's development at any stage of their career. That stage may be, for example, as student teacher, newly qualified teacher, subject leader or aspiring deputy or headteacher. There may be inconsistencies introduced through the role adopted by the mentor, by the mentor's personal and professional characteristics and by the context or stage of development as identified above. For instance, McIntyre and Hagger (1996) suggest that the term mentor has crept into use, in many professions, over the last ten or fifteen years but that the developing interpretation of the term in these wide-ranging contexts is sometimes unhelpful. For instance, the term may summon up connotations of personal relationships, informality and lack of structure.

Further to this Campbell and Kane (1996) deduce that not every teacher, adopting the role of mentor, makes a good teacher educator. They observed that this was particularly likely to be apparent in the area of subject specialism. They intimate that mentor knowledge, particularly subject expertise, is important. Although they suggest that there may be a general weakening of the role of university tutors as training becomes increasingly school-based, Campbell and Kane (1996) identify a continuing role for the tutor as subject expert. This arises from the fact that primary school teachers are generalist teachers in that they are tasked to teach a wide range of subjects. Similarly, in fulfilling the role, Campbell and Kane (*ibid.*, p. 15) point out that there is more of a risk of personal tensions being 'magnified' in the primary school although, conversely, mentoring in the primary school could be more 'natural'. Further to this Campbell and Kane (*ibid.*, p. 16) state that:

if, as indicated, it is acknowledged that the class teacher is a significant player, for primary mentors this appeared to be principally in that person's closeness to the student; it did not seem to have much to do with that person's subject knowledge.

The notion of the primary teacher as a generalist practitioner pervades primary school culture and even though primary school mentors recognize that there is a need for someone to provide students with the necessary subject knowledge, there is no move, for instance, to involve the subject leader or coordinator in this (Campbell and Kane, 1996). Similarly, there is no move to install subject specialist teachers in primary schools. This type of role has been undertaken, in the case of qualified teachers, by Local Authority advisers (these posts are currently on the decline) or by Advanced Skills Teachers but their activity is spread very thinly across the sector.

Focusing on mentoring within this generalist perspective it seems that, although schools think that students should spend more time in school, those schools value the role of the tutor in terms of the breadth of knowledge they have of a range of school situations but also in terms of 'the high quality training – not just the subject matter but the processes of thinking and analyzing which university staff encouraged in their students' (ibid., p. 21).

Campbell and Kane (1996) found that the student teacher is tasked to be reflective and to evaluate given school policy and practice but may be constrained in this by the desire to socialize themselves within the school community. This is similar to the findings of Coldron and Smith (1999) and Goodson and Cole (1994) in 9.5.3 below. This situation has implications when considering the importance and acquisition of subject knowledge.

Maynard (1996) found that experienced teachers in primary schools did not place value on subject knowledge in the early years of education. These teachers placed more emphasis on child-centred issues and felt that these would be constrained if subject demands were imposed. In addition, she found that the teachers had personal reasons for a reluctance to mentor students in subject knowledge, namely that these experienced teachers felt that they had gaps in their own knowledge, particularly in Maths and Science (Maynard, 1996). The teachers also felt that they were unsure about the nature, principles and processes of these subjects and why pupils should be taught them.

Maynard (1996) suggests that it was the National Curriculum that revealed the teachers' insecurities about these subject areas. Before the introduction of the National Curriculum (DES, 1988) teachers and schools decided on their own

curriculum. Maynard (1996) found that teachers were susceptible to cherry-picking their content. For instance they would teach areas of a subject that they felt competent with. After the introduction of the National Curriculum subject areas were liable to be taught superficially because of the sheer breadth of content to be covered but also, Maynard (1996) discovered, because teachers were required to teach areas of which they had little understanding. Maynard also found that these experienced teachers, in their capacity as mentors to student teachers, misinterpreted the meaning of subject knowledge. They felt it was concerned with factual knowledge. They did not equate it to the desire to create meaning. There was a feeling that the term 'subject knowledge' should be more broadly defined as 'subject-related knowledge' that is 'knowledge related to the teaching of the subjects' (Maynard, 1996, p. 51).

Maynard (1996) said that the mentors had to assume the role of 'teacher' of the student teachers. In doing this the mentors felt that they had to be much more formal and structured in their role (Maynard, 1996, p. 46).

Overall, Maynard (1996, p.50) stated that 'teachers did not have the time or the expertise, it was felt, to focus on the principles underlying activities – particularly those related to subject knowledge'. Maynard (1996, p. 54) concludes that:

'Mentors' difficulties with subject knowledge, their understanding of substantive content, and their understanding of the more theoretical subject principles underlying their activities – and their reticence to take on a more authoritative role in their work with student teachers appear to indicate the need for the continued involvement of the HEI (Higher Education Institution) tutor in students' school-based work'

Overall, it seems that this statement is reflected in the activities within this local Children's University as providing a vehicle for acquisition of subject and pedagogical expertise from a specialist university tutor. This is of benefit to the children, teaching students and qualified teachers.

9.5.3: The induction of Newly Qualified Teachers

Lortie (2002, p. 60) has referred to the induction process of newly qualified teachers as 'learning while doing'. He suggested that the transition from university student to practising teacher is an abrupt one in keeping with the notion of 'sink or swim' and this is borne out by what has been discussed above in section 9.4.1.

In fact, further to this and building on the discussion in section 9.3.1, this transition can be so stressful that it impacts negatively on the retention of entrants to the teaching profession. Vloet (2009) points out that it may depend on the extent to which the ideological ethos of the newly qualified teacher may be applied in the pressures of the workplace. This in turn is influenced by the extent to which more experienced colleagues provide support and encouragement. In other words it depends upon the extent to which key players are willing to shift along the continuum of professional identities (as discussed in section 9.4.1, see especially and Sfard and Prusak, 2005).

Cattley (2007, p. 339) in her study of the value of reflections on practice by student teachers suggested that this process might have a positive impact on retention of 'beginning' teachers. She intimates that in-depth, critical reflection on experiences in schools might help the student teacher to construct a more robust professional identity and to subsequently counter the problems met during transition to the role of 'beginning' teacher.

It was hoped that participation in CU activity may improve retention and sustain student teacher professional identity and support transition into the profession.

Vähäsantanen (2008) states that, traditionally, teachers have had a great degree of autonomy in their work. Indeed Hargreaves (2000) suggests that they perform better if they do have such autonomy and that management supports it. Vähäsantanen (2008) asserts that organisations that do work in this way may be called loosely coupled in the sense that individual teachers and small teams worked together under a 'flat' management structure. As a result Vähäsantanen (2008) suggests that weak control ensues and individuals can oppose suggestions for reform meaning that the process of change is slow. This was certainly the case prior to the introduction, in England and Wales, of the National Curriculum (DES, 1988). More recently, teachers have come under greater scrutiny in the form of inspection of teaching and learning by bodies such as, in the United Kingdom, the Office for Standards in Education (OfSTED). In line with this, management structures have become more strategically oriented with financial implications in mind Vähäsantanen (2008). This is what Vähäsantanen (2008) calls a tightly coupled organization. Teachers have less autonomy and this has implications for their professional identity. We have seen in section 8.3.1 that, for the teacher education student (or pre-

service teacher), there are complex issues impacting on their ability to develop a strong, sustained professional identity. It now seems that 'beginning' teachers (or newly-qualified teachers in the first year or two of their post) continue to have problems in developing professional identity. In their case, Coldron and Smith (1999) argue that it is a result of a tension between agency (the personal power or being able to act autonomously) and structure (socially imposed or given aspects). Coldron and Smith (1999) state that a teacher reshapes his or her identity such that it is socially acceptable, for instance by the community of practice, following conflict between how they see themselves as teachers and how others see them. This is borne out by Goodson and Cole (1994) when they found that a beginning teacher's 'new' professional identity formation is due to their interpretations of the new professional community.

Brooke (1994) provided a narrative of her development from student teacher to fully qualified professional. She observed that there was a transition from someone who teaches preschool into being a preschool teacher. She implied that the latter case, as a professional in post, demonstrates effective use of acquired knowledge and skills.

The beginning teacher is in a position where he or she is able to reflect on successful qualification as a teacher and to consider what sort of teacher they are at that moment in time. He or she, in reflecting on this, now needs to consider what sort of teacher they would like to become.

Having undertaken a course of initial teacher education teacher, beginning teachers will have engaged with a programme designed to provide grounding in the skills and knowledge deemed necessary, by teacher educators, to equip them for a career in the classroom. This programme comprised both theoretical underpinnings and practical experiences in schools. In order to continue to develop as a professional they may encounter further opportunities to extend their knowledge and skills both within school (through school-based in-service provision or informally by interacting with colleagues) or externally through courses delivered by the advisers, consultants or commercial agencies. This professional development takes place in tandem with, and informs, the development of professional identity. The local Children's University situation is one that addresses the bracketed contexts identified above although the emphasis is usually on less formal, almost incidental acquisition of subject

content and pedagogical knowledge because it is dictated by activities negotiated by the tutor and the teacher.

In one sense it highlights the 'agency' aspect of professional identity highlighted above. The beginning teacher may have expectations that they may be supported in the planning of their own professional development and in identifying appropriate training opportunities that will further those plans or aims. The extent to which this will be achieved may depend on the 'structural' aspect of professional identity outlined above in that management, acting on behalf of the school or community of practice, may restrict those opportunities or dictate other instances that are more tailored to the needs of the school rather than the individual.

At the other end of the spectrum we have the situation suggested by Darling-Hammond (1990) who suggests that the key to inducting teachers successfully is to execute this in professional development schools where expert teachers work with university tutors to formulate learning experiences for these newly qualified teachers. These professional schools resemble the 'teaching schools' postulated by the current (2012) coalition government in England and Wales. In relation to a learning situation encountered in the local Children's University it may be said that hierarchy in terms of expertise is 'flat' but depends on the subject expertise of the respective professionals.

Teaching Schools were advocated in a UK Government White Paper (DfE, 2010). It was envisaged that a national network of such schools, based on the notion of hospital teaching schools, would take a lead in the training of teachers and headteachers. The schools had to be designated as having outstanding practice by the UK Government's Office for Standards in Education (OfSTED). The Teaching Schools would be responsible for initial teacher training and for the continuing professional development of qualified teachers. There will be more detailed discussion of this in Section 9.5.4.3 later.

Such a situation, ideally, would ensure that the inductee is afforded the time necessary, with the expert teacher, to navigate the transition from student to beginning teacher most effectively. The presence of the university tutor may also serve to minimise the effect of tensions resulting from hierarchical

relationships and differing perceptions of professional identity, as described above.

From the perspective of stakeholder need in the formation of the local Children's University, the interesting aspects arising from data in relation to the above are stakeholder perceptions of expertise or specialist subject knowledge and the easing of problems associated with professional identity in moving from student to early career qualified teacher. These aspects are underpinned by the need for availability of appropriate subject specialist training, focused on individual need, throughout this continuum. Notions of expertise are explored in the following section.

9.5.4: The Continuing Professional Development (CPD) of teachers

We have seen above in sections 9.4.1 and 9.4.2 that there are times when a teacher's (pre-service and beginning teachers) professional identity undergoes readjustment. Indeed, we have seen that, in essence, there is an opportunity for lifelong learning to take place because a professional identity is never fully formed. This restructuring may be due to conflict between sub-identities such as context and relationships. In the case of experienced teachers this is further complicated, in particular, during times of educational change (Beijaard et al, 2004). This may be due to the fact that those experienced teachers are confronted with novel, challenging situations and initiatives. For example, the situation may be complicated because, in trying to administer a structured National Curriculum in England and Wales teachers feel that they do not have the flexibility to deliver it through a pedagogy that is in keeping with their professional identity. Newly qualified teachers have had limited experience of teaching any curriculum so might adopt approaches that are more in keeping with their current professional identity. There may be resulting conflict in terms of who is seen to possess the appropriate, perceived levels of expertise and credibility. Section 9.8 will explore these issues.

9.5.4.1: The battle between subject-related and generic CPD

One study (Soulsby and Swain, 2003) contrasts these two aspects. They highlight an award-winning piece of In-Service Training (INSET) provided by the DfES that comprised teachers researching their subject areas. More recently, this type of training has been supplanted by centralized training linked to whole

school improvement and driven by Government initiatives. The former INSET may be of greater benefit in developing a highly-qualified workforce that will impact directly on the learner. Indeed Soulsby and Swain (2003) argue that the term 'school improvement' should encompass development of subject knowledge and pedagogy. Leaton Gray (2005) reflects on this and suggests that schools and government are shaping teacher CPD to cope with short-term needs but that it would be better to consider long-term issues and to invest in teacher skills and professionalism. Indeed, in keeping with this, perhaps it is prudent to define the term Continuing Professional Development (CPD). Leaton Gray states that Richard Gardner of York University first coined the term in dealing with the professional development of those in the building profession in the 1970s. Leaton Gray said that it was selected because it did not distinguish between learning on courses or 'on the job'. CPD targeted continuous improvement in skills and knowledge extending beyond basic training. Leaton Gray (2003) asserts that, in teaching, such a situation used to be called In-Service Training (INSET) but that the shift towards CPD terminology gives the impression that there is a corresponding shift from provider to individual in that the latter assumes responsibility for their own development albeit under the 'umbrella of the school or schools that employ the teacher' (Leaton Gray, 2005, p. 5).

Further to this dichotomy between subject-based and generic CPD, MacBeath and Galton (2004, p. 12) found that opportunities for teachers to engage in subject-based CPD were being 'curtailed'. Their report discovered that teachers were finding it increasingly difficult to focus on subject teaching within the National Curriculum due to current institutional structures.

A National Foundation for Educational Research (NFER) report (Everett, Macleod, and Thurgood, 2013) focused specifically on science CPD but found that there was an emphasis on generic CPD related to school development plans and national developments rather than subjects. The report found that internal CPD (INSET) was predominant because it was cost-effective and that CPD was more useful if it occurred over an extended period of time with colleagues in collaboration. The report (ibid., 2013) discovered that there was very little science CPD undertaken and identified some barriers to uptake of science CPD by teachers. These reasons included financial constraints,

distance to course venue being prohibitive and a lack of awareness of specialized courses.

Leaton Gray (2005) suggests that teachers engage with the available CPD activity at different stages of their career as a result of personal circumstances, school needs and Government policy. Further to this Leaton Gray (2005) observes that teachers can make choices between time spent in the classroom with children or out of the classroom undertaking personal study and CPD. Some teacher colleagues may perceive the former circumstance as 'working hard' and the resultant stigma attached to spending time away from their class may result in a decrease in CPD involvement. Further to this, Leaton Gray (2005) assessed the balance between subject-related and generic CPD in the light of 'individual' involvement versus 'group' involvement. It was suggested that the former might support teachers in their career development whereas the latter stemmed from the need to address whole school issues. It was found that teachers were not taking part in subject-related CPD at all (Leaton Gray, 2005) with teachers blaming lack of funding or supply cover issues.

Subject-related CPD was available to teachers through engagement with Professional Associations (for example the Association for Science Education, ASE) and teachers valued the opportunity for networking in such instances. Informal networking was seen as a productive mode of CPD (Leaton Gray, 2005) and this resonates with Wenger's (1998) notion of social practice with a Community of Practice as being fundamental to developing identity.

Leaton Gray (2005, p. 29) concluded that modes of CPD such as '*ad hoc* courses and whole-school INSET days, supplemented in some cases by higher degree courses, that are usually self-funded by teachers' no longer meet the needs of teachers or schools. It was suggested that 'online learning, networked communities, local delivery of courses, and teachers attending subject courses alongside their pupils' (Leaton Gray, 2005, p.30) would be more beneficial.

Stakeholders in the local CU valued the opportunity to observe and reflect informally with professional practitioners or peers. This may be termed informal CPD and will be explored in the following section.

9.5.4.2: The notion of informal CPD

Informal learning was considered in Section 9.3 but here it is revisited in the context of teacher CPD. McNally et al (2004) explored Teacher Development of teachers during the early part of their careers. This work was based on the ethnographic research of teachers in their own schools. In essence, this echoes the suggestion of Leaton Gray (2005), seen above, in that it involves teachers and their children.

McNally et al (2004) consider opportunities for the professional development of what they call the novice teacher and suggest that formal structured situations, for example through lesson observations and related activity such as subsequent target setting, 'did not guarantee feelings of being supported - or indeed of developing' on the part of the novice teacher (McNally et al, 2004, p. 2). Policy intimates an over-reliance on formal procedures but novice teachers value the informal unscheduled interactions that, in addition to being of value professionally in a learning sense, fostered a feeling of belonging and friendship (McNally et al, 2004). This situation embodies the elements of informal learning advocated by Jeffs and Smith (2005) in that it involves conversation and spontaneity in a community of practice where learners can be happy and fulfilled. Further to this it is apparent that this is typical of episodes encountered through activity within this local Children's University.

In a brochure published in 2011 by Reform, an independent think-tank, with a focus on teacher CPD the Assessment and Qualification Alliance (AQA) Chief Executive, Andrew Hall (2011), stated that it was imperative to gain an understanding of what teachers want from their CPD in order for them to fulfill their potential. In trying to evaluate this he says that lessons must be learned from educational provision in other countries and that, in this country, we must evaluate the effectiveness of CPD so that schools only invest in activity that has a real positive impact on learner outcomes. Hall also recognizes that, due to budget constraints and demands on teacher time, it is increasingly difficult for teachers to spend time out of the classroom in pursuit of professional development.

Timperley (2011) alludes to the quality of CPD activity available to teachers, as hinted at by Hall (2011) above, in saying that it is often mandatory and often

demeaning and passive in nature. Timperley also highlights the fact that millions of pounds have been invested in teacher CPD in England in the hope that it will improve schools. She suggests that this activity has been doomed to failure because they do not improve student learning. Further to this Timperley (2011) suspects that this is because such initiatives do not recognize how people learn. Timperley (2011) puts forward a remedy for this failing by stating that professional learning must become core school business. Her rationale for this is that what happens every day in school has greater impact than with one-off training events. In addition she suggests that such CPD should focus on deep learning and expertise related to the curriculum (it can be argued that this takes place as an aspect of this local Children's University), to teaching and to assessment in order to improve student learning. Furthermore, she asserts that such learning takes time and the learning environment should recognize this.

Boyle (2011) echoes the above authors' thoughts on the failings of 'out of school' formal courses by intimating that such teacher engagement with CPD should be school-based and that it should involve active collaboration by teachers rather than passive reception by the individual. Boyle goes on to state that teachers themselves should be involved in the design of such activity in order to assume ownership and that they should be given time to reflect on evidence-based practices. In other words, Boyle proposes collaborative teacher communities. He stresses the need to be wary of a 'one size fits all' pedagogy rather than implementation, in Initial Teacher Education (ITE) and in CPD that meets the learner's needs, in this case that being the learning of the teacher.

The McKinsey Report (Barber and Mourshed, 2007), in relation to this, recommended that schools should be provided with the best quality teachers and that they should continue to be developed professionally. Focusing on the former point Husbands (2011) states that, in learning from systems such as those in Finland and Singapore, the English system needs to aspire to universities and good schools working closely together on subject and pedagogic knowledge based on how children learn. The second point is discussed above. Much of the recent thinking by key players, driven by UK Government Policy, is based on rigid or even prescribed systems of curriculum and assessment on more than one level. There is a climate of performance measurement on the part of both teachers, and consequently their schools, and

pupils. This has resulted, in England, in a situation where schools are ultimately compared within 'league tables'. The outcome, in terms of CPD, is one in which such a system has dictated the content and structure of teacher CPD and that has resulted in formal, often passive training.

A second report for McKinsey (Mourshed, Chijioke and Barber, 2010) followed but both have been open to criticism. Coffield (2012) points out that the first McKinsey report (Barber and Mourshed, 2007) is received by many in the belief that it will transform education anywhere irrespective of culture or socio-economic demographic. Coffield (2012) suggests that both reports are deficient in a number of ways. A central principle, Coffield contends, is that the first report reduces the key to improvement down to a single attribute, namely the quality of the teacher. He argues that this is questionable when the complex system of education is considered and that improvement is down to a variety of factors. Coffield identifies the notion of 'best practice' that is alluded to many times in the reports. He argues that this ideal is difficult to identify or isolate. Furthermore he intimates that it is not transferable from one teaching and learning context to another because of changes in the needs of the learner and the teacher in their learning environment. In addition, it may be said that 'best practice' is difficult to define fundamentally because it means different things to different people. For instance 'best practice' to a child in the classroom may mean a mode of teaching that motivates, excites or engages them with the learning process. 'Best practice' to a teacher may mean an approach to teaching that enables the teacher to raise the level of attainment of the majority of learners as measured by Standard National Tests of Attainment. This aspect suggests an element of the Complex Adaptive System, outlined in section 8.2 above, where there is tension between Government policy and preferred teacher pedagogy and curriculum. This aspect is alluded to by Adams (2008, p. 381) in a paper which considers 'best practice' when he states:

In turn, the realist position describes 'successful teaching' as that which follows certain procedures. Such procedures, in turn, bring results conclusively demonstrated by the aforementioned increases in test scores. In this way, associated statements about best practice are thus paraded as truisms about learning and teaching.

Adams (2008, p. 388) recommends research in the area of teacher and pupil perspectives on pedagogy:

Here it would seem that research opportunities should be created that explicitly seek to identify three elements of professional and pupil pedagogic views. Firstly, that held to be of merit and worth in describing learning–teaching interactions. Secondly, how such views are coterminous between the two identified groups. Thirdly, and more importantly, how the re-articulation described above duly denotes and delimits pedagogic certainty.

Crucially, in considering teacher CPD, Coffield (2012) states that even if best practice could be identified it would be difficult to pass on to other teachers. He recognizes one of the reasons for a heavy reliance on cascade training, for example when teachers attend a course and then deliver INSET to colleagues in school, as being able to input to large numbers but suggests that teachers might not be receptive to such an approach for several reasons. Coffield says that such training may have an impact at its point of initial delivery but that the message becomes diluted by the time it has reached colleagues in school where, as we have seen above, teachers receive it passively. Further to this teachers may adhere to their underlying professional identity and, Coffield (2012), suggests may appear to comply with aspects of the training but are likely to pay lip service, to adapt it or ignore it. This, he asserts, is because it is delivered from the top whereas there is a chance of greater success in assimilating innovation if it is generated through collaboration between trusted peers. Coffield (2012) claims that the second McKinsey report (Mourshed et al, 2010) states that school improvement passes through four possible stages, from poor through to excellent. The first task of a school is to identify where it lies on this continuum. The report, says Coffield (2012), argues that a strong leader is needed if the standard is poor but that there is greater autonomy on the part of the teachers on the journey toward excellent standards. The report suggests that this may be achieved by introducing features such as self-evaluation and professional learning communities.

The latter feature has implications for teacher professional development and a recent manifestation for such provision will be discussed in the next section.

9.5.4.3: Joint Practice Development

Recently, in England, there has been a commonly occurring addition in nomenclature of teacher professional development namely Joint Practice Development (JPD). A guide produced by the National College for School Leadership (NCSL, 2012, p. 3) describes JPD as a more effective way of ‘supporting the mutual learning of teachers, students and others through

working more closely together across schools'. The guide is based on research drawn from the practices of five Teaching School alliances within the UK.

The guide (NCSL, 2012, p. 7) states:

Traditional approaches to CPD are largely based on transferring knowledge or 'best practices' from an expert presenter to his or her audience. Research shows that this is rarely effective. By contrast, JPD is a process by which individuals, schools or other organisations learn from one another. It has three key characteristics; it involves interaction and mutual development related to practice, recognises that each partner in the interaction has something to offer and, as such, is based on the assumption of mutually beneficial learning [and] is research-informed, often involving collaborative enquiry

There are echoes of what Darling-Hammond (1990) intimated in section 9.4.2 above so the guide is certainly correct in its assertion that JPD is nothing new. Collaborative professional development was the subject of a paper by Rueda (1998) that explored it from a sociocultural perspective. Rueda (1998, p. 3) describes a model involving 'assisted performance by a more competent other'. Rueda (1998, p. 3) contrasts collaborative CPD with workshop provision by an expert and suggests that collaborative CPD is 'more permeable and flexible than in models of professional development practice which rely on outside experts. Thus a one-shot workshop provided by an expert will not be as effective as a collaborative effort to solve a common problem'. Rueda (1998), over a decade before the advent of Teaching Schools, discussed communities of discourse and joint solving of authentic problems in meaningful, everyday contexts. The approach encourages flexibility 'to allow for local differences and diversity—and concrete—to avoid the syndrome of 'that sounds good, but it won't work here.' (Rueda, 1998, p. 4).

At this point it is worth revisiting the Teaching Schools scenario, identified in Section 9.4.2 earlier, but this time in more detail. Hargreaves (2011, p. 4) states that the UK coalition Government decided that school leaders should have the biggest say in improving education because 'teachers learn best from one another and should be more in control of their professional and institutional development than they have been in recent years'. The outcome was that outstanding schools should become 'Teaching Schools' in order to lead school improvement coupled with the strategic alliances that they form with partners. Hargreaves suggests that the Teaching School, classified as outstanding by OfSTED, should not be considered to be at the top of the hierarchy in a strategic alliance and other linked schools but 'is to be the network's hub or the

nodal school that offers strategic leadership, and co-ordinates, monitors and quality assures alliance activities and expertise' (2011, p. 5). Hargreaves goes on to recommend a model for such a strategic alliance, based on what he calls a complex collaboration, which is built on three dimensions. These are identified as 'professional development, partnership competence and collaborative capital' (Hargreaves, 2011, p. 8). Hargreaves is generally in favour of the approach but there are hints of reservation, for example when he observes that 'a school judged as outstanding in student achievement does not necessarily have a matching competence to initiate and sustain a partnership with other schools. Moreover, there will often be substantial differences between teaching schools and their partner(s), some of which may have relatively little previous experience in either ITT and/or cluster-based CPD' (Hargreaves, 2011, p. 9).

The dimension that is particularly relevant for consideration here is professional development. Hargreaves (2011, p. 8) breaks this down into four strands that he calls joint practice development (JPD), talent identification and development through distributed leadership, mentoring and coaching and finally distributed staff information.

Again, aspects that it would seem prudent as a focus for this current discussion are JPD and mentoring and coaching. Hargreaves (2011) gives prominence to professional development because he says that it is one of the main ways to improve teaching and learning and consequently whole system improvement. Teaching schools will take the strategic lead in teacher professional development by advocating peer-to-peer learning and by identifying and deploying Specialist Leaders of Education (SLEs). The vehicle for teacher professional development will be JPD.

Hargreaves (2011) arrives at a definition of JPD by describing the methods by which teachers have acquired professional development over the past thirty years. He outlines what he terms the knowledge model and the practice model. He suggests that the former places a large emphasis on what he calls Initial Teacher Training (ITT) and acquisition by students in Higher Education Institutions (HEI) of educational 'theory' (2011, p. 10). Hargreaves suggests that more time is spent in the Higher Education Institution but with shorter amounts of time spent on teaching practice in schools. He says that there were sporadic opportunities to attend out-of-school courses that were designed and delivered

by HEI staff or Local Authority advisers. In later years, he says that teachers acquired professional development through training cascaded from central government. The latter variant, the practice model, is described by Hargreaves (2011) as being less about cognitive academic knowledge and more about development of best professional practice. The focus here, he says, is about learning-by-doing and with more time spent in school. Crucially, Hargreaves (2011, p. 10) observes that 'it is assumed that throughout their careers teachers need, and are entitled to, regular opportunities for continuing professional development (CPD)'. He says that the aim is to improve what teachers do and not merely what they know. In addressing this he observes that professional development is about 'craft know-how rather than book learning' (Hargreaves, 2011, p. 10). Delivery, in the practice model, is concerned with in-house design and delivery through peer-to-peer mentoring and coaching coupled with the teacher's own research (Hargreaves, 2011). Schools must, says Hargreaves (2011), go beyond the practice model and raise professional development to a new level through JPD and Strategic Alliance.

Hargreaves (2011) discusses professional development by suggesting that peer-to-peer learning has become known as sharing good practice. But this sharing of good practice does not always result in practice transfer (Hargreaves, 2011). He tasks Teaching Schools with ensuring practice transfer by moving teachers to the site where the good practice is to be developed through a process of mutual observation and coaching. In essence, suggests Hargreaves (2011), it is not a case of transferring practice unilaterally but one of co-construction that will lead to innovative practice. A benefit of such a situation is that professional development would take place in context. This situation approximates to some of the activity undertaken in this local CU.

The notion of providing teachers with the time to work together in this way is not new. Harwell (2003, p. vii) called for such a focus on what happens in the classroom because she observes that such an approach 'unlike "one shot" workshops and in-service days, allows teachers to acquire and practice new skills over time'. Harwell (2003) suggests that the latter form of CPD is inconsistent in terms of quality and that it often highlights problems but does not offer suggestions on how to remedy them. Harwell (2003) identifies context, process and content as being critical characteristics of CPD. Within a given

context Harwell (2003) states that there must be a shared sense of the need for change and that if this is the case then ensuing professional development that focuses on the change will have greater chance of success. If this is not the case then 'when the information and/or strategies presented via professional development contradict the participating teachers' beliefs, the teachers usually go right back to what they had been doing all along' (Harwell, 2003, p. 4). Harwell (2003) observes that changes to teachers' beliefs and positive teacher development are better achieved through communal activity. In relation to contextual issues Harwell (2003) highlights the link to process in that teacher development should impact on pupil learning and should focus on pedagogical strategies and that it should take place over an extended period of time. Moreover she suggests that the actual delivery of CPD should model these strategies. This means that learning should be contextualized, it should be acquired in familiar settings because, as a result, any information gained is more useful and teachers can make more sense of it – they can relate to it.

Harwell (ibid., p. 7) summarises this by saying:

Professional development in which participants are given the opportunity to learn new classroom practices, in the contexts within which those practices will be used, is far more effective than more traditional methods of professional development.

Further to this, in her recommendations Harwell (2003) refers to the work of Sparks and Hirsch (1997) who advocate that collaborative teacher development take place in learning schools where staff study what they teach and how they teach it. Again, this can be likened to the situation in some aspects of this local Children's University.

Similarly Cordingley et al (2003, p. 1) review Collaborative CPD and define it as 'teachers working with at least one other related professional on a sustained basis'. Cordingley et al (2003) found that such an approach gave teachers a greater confidence and willingness to try things out with subsequent enhancement of knowledge and practice. Cordingley et al (2003) identified a range of features related to such CPD. The most interesting in relation to the research of local Children's University formation are the use of external expertise related to school-based study with reflection involving Higher Education Institution support. Again, as we have seen above, teachers isolated the CPD issues as being particularly relative to them. All of the studies reviewed

by Cordingley et al (2003) involved use of an external 'expert'. One in particular focused on development of subject knowledge. It investigated the impact on pupil learning for two groups of teachers. One group had input from an external specialist whereas the other relied solely on teacher collaboration. The former group made more changes than the latter group with subsequent improvement in pupil learning. The external specialist, in addition to providing expert input, acted as an external change agent (Cordingley et al, 2003) and once a focus had been identified by teachers, the expert academic highlighted current research in the area and shared decision-making with teachers. In addition Cordingley et al (2003) found that the outside expert brought subject expertise to invigorate knowledge in that particular subject. Teacher observation and feedback was sometimes informal and accompanied by unstructured conversations between teachers coupled with more formal observations involving the outside expert (Cordingley et al, 2003).

9.6: Children's learning (time, place and the resources employed – the learning environment)

The local Children's University was delivered largely as an extracurricular activity but schoolteachers also requested that some activity should take place during the school day. Stakeholders felt that the most successful learning was achieved in spaces that were not the children's usual classrooms. These places may have been other classrooms, outdoor areas or school halls.

Smith (2006, p. 19) notes that 'there has been a growing appreciation in policy debates of the significance of relationships and learning beyond the formality of the classroom'. There are also indications that there is a link between learner participation in such activity and educational achievement as well as benefits in 'building social capital' (Smith, 2006, p.19).

Greater importance has been placed on the value of 'out of school learning'. Michael Barber (1997, p. 257) stated that 'however much schools improve, inspiration and motivation to learn are much more likely to come from children who benefit from involvement in out of school activities as well as formal schooling'. A Government-funded study (Barber et al., 1997) found that there was a link between successful schools and the amount of extracurricular activity and homework that they provided. The focus on 'out of school hours' was on

two areas. Firstly there was curriculum enhancement in the form of clubs and secondly there was curriculum extension in the form of homework clubs and extra tuition (Smith, 2006). The former approach was more informal and child-centred but more emphasis seems to have been placed on the latter curriculum-focused approach in an attempt to drive up school standards (Smith, 2006).

Smith (2006) suggests that informal education can offer an alternative to what Illich (1973) described, in discussing extension of schooling, as an institutionalisation that undermines people. Smith (2006, p.21) asserts that 'informal education can offer an alternative - but it does depend on its practitioners developing strategies to distance their work (and their thinking) from the sorts of packaged and prescribed activities that are the normal fare of schools and colleges and holding on to the notion of extracurricular rather than falling into the trap of curriculum extension'. Importantly, Smith (2006, p. 21) suggests that informal educators should work with teachers to 'deepen their appreciation of educational forms that value process and conversation'.

There are some who suggest that schools cannot be expected to prepare learners to cope effectively with their lives in an increasingly technological and fast-changing world through formal education alone. One such researcher is Heath (2000, p. 34) who states:

One common worry among both theorists and practitioners is that dependence on formal schooling, even in the light of all the current reform efforts, will leave students short of the experience needed to establish the expertise, critical skills and confidence which are critical to the future world of work and to the altered family and citizenship demands of the world. Schools cannot offer the extensive time for practice and participation and build-up of moral commitment and group discourse needed to develop all that employers, policy makers and philosophers say will mark the future.

Nocon and Cole (2006) highlight formal education's complementary role in relation to informal education is manifested in the semi-formal activity of after-school provision. Heath (2000), although celebrating the part that after-school provision can play in fostering the benefits of informal learning, is wary of the danger of schools' standard practice encroaching into these after-school programmes.

Reports in the United States of America (1998) recommend that after-school programmes should be integrated with the formal school curriculum, essential curriculum extension, because there is evidence that it improves the quality of

children's homework, their attendance rates and additional study time for targeted learners. In the UK, this latter case has become known as 'booster classes' for some learners to receive additional tuition with a view to better performance in the Standard Attainment Tests undertaken by children as summative assessment of their progress under the National Curriculum (DES, 1988).

Nocon and Cole (2006) give an example, in America, of an after-school programme called the Fifth Dimension through which children, adult learners, University staff and individuals from the Community engage in computer-based problem solving. It is aimed at children who are educationally, culturally or socioeconomically deprived. Learning takes place at a variety of levels for a variety of learners who comprise the stated participants. The children take part voluntarily in engaging with learning activities with the college students. There was a development of this called the Magical Dimension (Nocon and Cole, 2006, p. 107) that became the first Fifth Dimension programme to operate locally in a school. After a time it was noted that attendance figures were low so the Magical Dimension organisers liaised with the school to see how the programme could best meet the school's needs. The result was that the initiative developed into a homework club.

In 1995 the University of California developed what effectively amounted to a Widening Participation policy (Regents of the University of California, 1995) that eliminated discrimination of any kind. This included race, ethnicity and religion. It also extended to include support for those learners who were historically underrepresented. An initiative was subsequently developed called UC Links which was essentially an after-school programme based partly on the Fifth Dimension programme outlined above. It linked the computer systems of the University of California campuses with schools and community sites across the state of California. The University of California hoped that the initiative would provide a steady flow of students equipped for University-level study (Nocon and Cole, 2006). There was initial success and the number of participating schools, learners and undergraduate students grew. A similar trend to that witnessed in the Fifth dimension initiative eventually developed when schools began to withdraw from the scheme because it was not having a positive impact on their test results or standardized scores (Nocon and Cole, 2006). This is a

reflection of the pressures faced by schools in trying to fulfill the targets set by Government as they try to demonstrate that Government policy is being successful in raising standards of learning. Nocon and Cole (2006) argue that this is an example of the dichotomy between preparing learners to become citizens able to make positive contributions to society or for learners to be trained to perform well in standardized tests (see discussion based on Lemke and Sabelli's questions earlier). Eventually the children elected not to participate because the external pressures meant that they were not able to utilize their strengths or to engage fully with the participating undergraduates (Nocon and Cole, 2006). Data outlined in Chapter 6 identified the importance placed by teachers on the role of teacher education undergraduates. Some children did elect to complete homework in learning spaces identified by them (here we have further evidence of the importance placed on learning environment by CU stakeholders) and also to undertake other informal learning with caring adults. Nocon and Cole (ibid., p. 117) state that:

this has been particularly for children who are not successful in school and who find in informal education access to learning and identity formation as successful learners.

Halpern (2002, p. 206) agrees in saying that:

Low and moderate-income children deserve the same access to enriching organized activities as their more advantaged peers. Yet low-income children, as all children, need space – social as well as physical space – to develop their own thoughts, to daydream and reflect; to dabble and dawdle; to pretend, try on and rehearse different roles and identities; to learn friendship and to learn how to handle interpersonal conflict; to rest and be quiet; and not least to have fun and take risks of their own design and choosing.

Resources are also an important part of a learning environment. Evidence in data pointing to the value of resourcing will be discussed in Chapter 10. These attributes were recognized as being important as part of the initiatives outlined above.

9.6.1: Extended Schools

Some local Children's Universities were allied to or fell under the remit of Extended Schools Provision. Ruth Kelly, Secretary of State for Education and Skills stated that 'by 2010, all children should have access to a variety of activities beyond the school day' (DfES, 2005, p. 4). These activities are known as extended services and the aim is for schools to work in partnership, particularly with parents. The UK Government intended to invest up to £840m

up to 2008 so that schools could offer extended services including childcare, parenting support programmes, community-based health and social care programmes, multi-agency behaviour support programmes and activities outside of school hours such as clubs and breakfast clubs.

It was felt that extended services would help improve standards, would enable children to have fun in developing new skills and would encourage parental involvement.

Cummings et al. (2007) suggest that there is a long history, in education, of schools trying to develop parental and community involvement or partnership. Successive UK Labour Governments tried to further develop such approaches to school-community involvement. Extended services were one such development that aimed to raise standards of achievement and support social inclusion particularly in disadvantaged areas (Cummings et al., 2007). This is driven by the belief that today's schools are failing learners because schools cannot meet the complex needs of those learners (Cummings et al., 2007). According to Cummings et al. (2007), schools and partner agencies find it difficult to develop successful extended services because of the difficulty of defining and responding to the needs of learner and community. There is little helpful guidance for schools and partners in terms of aims or strategy. Guidance appears to simply list activities with which they might engage (Cummings et al., 2007) rather than offer answers to basic questions relating to strategy. Indeed the UK Government openly suggests that there is no blueprint. This appears to place the onus on schools to produce one. Thus there is a situation where all of those involved draw their own interpretations of what is involved and consequently formulate their own understanding.

Evidence gathered suggests that these disadvantaged communities did not have education as a priority and that, in order to raise aspirations, there would have to be a change in the culture of the whole community (Cummings et al., 2007). In addition, it was found that such a transformation would involve multi-agency partners to re-energise the community. However, because of the lack of clarity of aims or intentions as identified above it is felt that extended services would exist as local developments linked to local need. This situation is susceptible to problems such as waste of resources because it relied on the strategic interpretation of individuals who, at certain times, may be prone to

move on only to be replaced by others with a different understanding.

Cummings et al. (2007, p. 197) highlight a major assumption but declare that such conclusions are open to challenge:

Educational achievement offers a reliable pathway out of disadvantage; that the effects of family and community background on achievement can be overcome by the sorts of interventions that community-oriented schools can muster and that state institutions led by professionals with little local accountability are justified in making such interventions.

This local Children's University was not linked to Extended Schools provision but the ethos of the latter initiative is relevant to this local CU in considering the needs of children and their schools.

9.7: Raising of children's aspirations (set in the context of evaluations of Children's University provision by Professor John MacBeath)

John MacBeath was commissioned to evaluate the National Children's University network and has produced four such evaluation reports on an annual basis commencing 2008-9. He has worked with the Children's University in a consultancy and evaluation role since 2007.

This section will explore some of the findings of those evaluations and, in an effort to gain a flavour of current outcomes and trends; it will begin with a consideration of the latest 2012 evaluation (MacBeath, 2013).

The aims of the evaluation are complex and numerous. It sets out to explore the level of pupil participation, the 'added value' to their learning, issues of pupil self-efficacy and motivation, the CU curriculum's impact on extending learners' skills and knowledge, the role of school staff in encouraging pupil participation, the role and impact of learning destinations, quality assurance and finally the contribution and impact of the CU Trust management team (Macbeath, 2013, p. iv).

The Key Findings of the evaluation are listed, in the Executive Summary, through the 'Ten 'A's' (MacBeath, 2013, p. 1). These are Attendance, Attainment, Achievement, Attitudes, Adventure, Awards, Agency, Aspiration, Adaptability and Advocacy.

There is consistent evidence, since 2007, that children participating in CU activity have better attendance records than those children who are non-

participants. Attainment by CU attendees, as measured by Standardised Tests, is higher than that of non-attendees. Achievement is measured by the extent to which CU attendees participate and excel in a range of activities extending beyond National Curriculum requirements. It can extend to participation in schools' extracurricular provision and to life beyond school (MacBeath, 2013).

The 2013 Children's University Evaluation also attests that children change their attitude to school and to learning through involvement in Children's University. This is evidenced formally and informally through meetings with teachers, parents and children (MacBeath, 2013). Coupled with this MacBeath suggests that children are willing to take more risks with their learning and states that 'the nature of risk outside of curriculum and classroom is of a different order to risk of failure or humiliation inside the class' (ibid., p. 2). MacBeath (ibid., p. 3) found that extrinsic reward was not the main reason why children said that they participated in CU activity. The CU Learning Passport, in which children recorded credits per hour of learning, was valued by children and '84% of children' said that they needed the credits to be able to take part in the Graduation Ceremony.

Children demonstrated a sense of what MacBeath (ibid., p. 3) calls 'agency' in their approach to learning. In other words they felt more able to take the initiative rather than to accept or conform passively. MacBeath asserts that:

one of the more worrying findings of school effectiveness research is that a sense of agency diminishes as children attend school, as conformity and obedience tends to be valued more highly than initiative, individuality and idiosyncrasy (ibid., p. 3).

MacBeath's Evaluation (2013) highlighted a further 'A' in the form of Aspiration. He refers to children in disadvantaged areas of the UK and suggests that lack of aspiration may be reinforced by the children's peers and by their parents. He states that there is a raising of aspiration, specifically in aspiring to a University education, as a result of CU participation.

MacBeath (ibid., p. 4) defines Adaptability as 'the ability to adapt to new situations and new challenges' and stresses that this is exhibited by children, teachers, schools and the educational system too. Children are able to adapt, for instance, to learning inside and outside the classroom and to get on with their peers in such settings. Teachers and schools are apparently adapting to or

are acquiring new contexts and opportunities of learning but MacBeath (ibid., p. 4) warns that:

for the benefit of learning beyond the classroom to be realised teachers need to be informed and alert to children's renewed self-confidence and their history of experience beyond the national curriculum.

At the HE level:

the embrace of the Children's University by universities, and in many instances by the support of their Vice Chancellors has been shown in making premises available, investing time and goodwill and participating in graduations (ibid., p. 4).

The final 'A' identified by MacBeath is Advocacy. He says that it is evident that CU is endorsed, celebrated and received at many levels, by many methods and by many people as its benefits are communicated to more and more people both in the UK and abroad but that central to this 'it is through the tangible gains and the voices of children and young people that the CU is sustained and enhanced' (ibid., p. 5).

9.7.1: Aspiration in relation to the needs of stakeholders – the children

MacBeath (ibid., p. 14) identified aspects of CU participation that children valued. Features that were rated most highly by children were:

- . I love learning new things
- . I get help when I'm stuck
- . It is important to me to get credits so I can take part in graduation ceremonies
- . I'm not afraid to try things out even if I fail
- . I pay more attention in class since being in the CU
- . I have a learning passport and use it a lot
- . I now feel much more confident about my class work

MacBeath (ibid., p. 14) also considered the curriculum presented to children. He contrasts them as portrayed in Table 17.

It is worth noting what some of the children encountered by MacBeath (ibid., p. 14-15) thought about the curriculum that they engaged with:

[In CU] it is longer, we can do more complicated things and it's more fun!

You do get better at learning things because all the things you do in Children's University are about learning, and you're not rushed or made to write everything down or get marks, so you just get better at learning anyway.

You also get on better with your teachers when you are in clubs or you go away

with them on a trip and they are more like friends rather than just teachers.

It would appear, therefore, that the learning experiences encountered by children are valued but that children are particularly enthusiastic when they have some ownership of those experiences. This ownership may be as a result of children ‘voting with their feet’ in voluntarily electing to participate or it may be because they are actively engaged in deciding what they are learning and how they are learning it. If this pure learner-centred situation cannot be achieved then the next best scenario is one where the learning ‘provider’ ensures that the content and pedagogy is in keeping with children’s ideals.

Table 17: Comparison of school and CU curricula

School Curriculum	CU Curriculum
Standardised	Wide-ranging
Pre-determined	Spontaneous
Hierarchical in value	Equality of Value
Sequential	Multiple Entry Points
Competitive	Collaborative
High stakes	Low stakes
Norm referenced	Criterion referenced
Classroom bound	Beyond the classroom
Teacher led	Student led
Elitist	Democratic
Tradition	Innovation

Whatever the context it is clear that the process of learning experienced within the Children’s University initiative is rated highly by children. Graduations form a high point in the life of a local Children’s University (MacBeath, 2013) but it is not clear whether children see these as the main reason for participation or whether that is the act of taking part in learning experiences. In other words there is not a clear gauging of process against product or extrinsic outcome.

9.7.2: Aspiration in relation to the needs of other stakeholders

MacBeath (2013) found that parents felt that their children were performing better at school as a result of participation in Children’s University. In a survey of forty parents based on one local Children’s University, thirty-five parents stated that their children had developed new interests and acquired new skills and knowledge. The parents valued the raising of children’s aspirations, broadening of horizons and the accompanying recognition of their children’s

participation in Children's University.

The aspirational impact on children was commented upon by headteachers of participating schools but, further to this, one headteacher commented that he felt it raised aspirations of participating teachers (MacBeath, 2013). This, the evaluation states, is as a result of a heightening of expectations and development of a love of learning by the children. Headteachers felt that participation in Children's University empowered the children to take responsibility for their learning and to develop life skills such as cooperation and collaboration. Headteachers reported that participation in Children's University had a measurable effect on children's attainment and scores in National Standardized Tests. The headteachers suggested that schools' engagement with the CU initiative attracted positive comment by Ofsted (MacBeath, 2013).

A requirement of membership of the National Children's University network is that local Children's Universities are linked with a Higher Education Institution (HEI). The HEIs are not involved, essentially, for profit-making purposes. HEIs are increasingly finding that Children's University involvement has benefits for staff and student development. Engagement with the initiative in relation to the 'product' of a graduation ceremony enables the HEI to raise a positive profile in the community and to develop an understanding of the needs of that community (Macbeath, 2013). HEI involvement also provides opportunity to develop prestigious marketing material.

As we have seen above the role of parents, in supporting their children's education, is encouraged by schools. The Children's University also values parental involvement. Such involvement has been the subject of dedicated initiatives in the recent past such as Education Action Zones (which emerged in 1998 and were later known as Excellence in Cities Action Zones) and Extended Schools (the Department for Education and Skills began to promote these in 2002). Consideration of Extended Schools are particularly relevant in relation to the Children's University and will be discussed in the next section.

9.7.2.1: Aspiration in relation to community

Many of the schools participating in the formation of the local Children's University stated that they valued the opportunity to work with the University as a Higher Education Institution (HEI) as it furthered their ambition to make links

with the wider community. Such links can have bilateral benefits in the sense that there can be positive outcomes for both the school and the community. In terms of pedagogy and curriculum:

a focus on school/community links does not mean that schools change their focus from education to community revitalisation. On the contrary, strengthening links between schools and communities can lead to clear educational outcomes. (Cavaye, nd, p. 1).

Schools bring vitality to the community and the community provides a context for learning (Cavaye, nd). A benefit to the community is that children 'become more effective citizens as young people and as future contributors to society' (ibid., p. 1). Schools may build relationships with community members such that the latter become mentors in children's learning whereas, conversely, community members may access the school's facilities for their own learning or development (Cavaye, nd). Teachers within the schools may benefit in terms of their professional development by orienting with community needs or issues (Cavaye, nd).

Schools are keen to involve parents in their children's education and in the life of the school. Martin et al (1999, p. 59) assert that 'a new role for schools is envisaged at the heart of the community education system which will facilitate a new agenda between schools, parents and the community'. Furthermore the emergence of community schools brought the roles of parents and community members into prominence and:

Conservative reforms in the 1980s, as is now well documented, championed the role of parents as consumers and upholders of public accountability, whilst bringing local stakeholders into the heart of school governance through reformed school governing bodies and school boards. (ibid., p. 59).

For real benefits to develop there is a need to blur professional boundaries between the potential partners of parents, teachers and community members and this may be achieved through collaborative ventures (Martin et al, 1999). Parents and community members were encouraged to become school governors (Martin et al, 1999).

In their study Martin et al (ibid., p. 63) affirm that:

within schools there are two broad traditions of teaching. One emphasises knowledge of a subject or discipline which frames the process of pupil learning within the boundaries of the school as the institutional arena of learning. The other identifies the enabling role of the teacher in responding to the learning needs of the student as a whole person, which can only be developed by involving the student in defining the learning process beyond, as well as within, the boundaries of the

school.

Further to this, their paper argues that:

The professional tradition of the school often emphasises the community as a site for enriching the curriculum and has developed understanding of the significance of parental participation for improving pupil motivation, behaviour and achievement. The school reaches out to the community to enhance traditional goals of pupils' progress and performance but the institution remains the source of the educative value and process (ibid., p. 63).

The school uses the community to enrich the curriculum of the children whereas the community is concerned with empowerment of its citizens to help the community to evolve or regenerate (Martin et al., 1999). Schools are encouraged to develop collaborative partnerships with their community, principally through parental involvement and Martin et al. (1999) suggest that those schools that value kinship, collegiality and neighbourliness by trying to build a sense of community are more likely to be successful in developing such partnerships. Conversely, Martin et al. (1999) intimate that schools who adopt a contractual or rational approach will be less successful in building sustainable, collaborative partnerships. Martin et al. (1999) state that, in Scotland, it is difficult for schools to develop the parental involvement that will benefit the learning of both pupil and parent because of the constraints of curricula driven by assessment and certification. They suggest that schools can only play a small part in a complex system, involving Further and Higher Education Institutions, Community Education Services and voluntary organisations that aim to seat collaborative partnerships at the heart of learning communities. Martin et al. (1999, p. 72) state that stakeholders need to agree an approach to collaborative partnership that is inclusive, that recognises social as well as academic goals, that raises expectations and involves local people in decision-making and that involves democratic participation and active citizenship.

The Department for Children, Schools and Families (DCSF) decreed that, from September 2007, all schools should have a duty to promote community cohesion. This is defined as a desire to develop a common vision and sense of belonging through which similar life opportunities are available to all (DCSF, 2007, p. 3). Schools can achieve this through teaching, learning and the curriculum by encouraging understanding other people, valuing diversity and developing shared values through equal opportunities. It is suggested that extended services (possibly through the extended schools initiative) and

interaction with the wider community can help to support this endeavour (DCSF, 2007).

9.8: Expertise of the university tutor (perceptions of credibility and professional identity)

A further category emerging from the study was that concerning the nature of expertise and the related issue of credibility. These are discussed below in relation to professional identity.

Boreham and Gray (2005) highlight what they call core professional identities that they suggest evolve through practice in context. In addition, these identities 'involve the self-interpretation of ability by the persons involved' (Boreham and Gray, 2005, p. 1). Furthermore, 'they invoke value systems which are both inherited from the past and directed towards the future' (Boreham and Gray, 2005, p. 1). It is the second of these features that is of particular interest here because it relates to an individual's perceptions of another person's ability, in other words it relates to expertise and credibility. Boreham and Gray's (2005) model of professional identity is based on the premise that it relies on professional interaction, collegial support and communication within the practice setting. Consequently, they construct a model based on multiple selfhood, collectivity, communicative action, recognition, professional expertise and spatial possession (Boreham and Gray, 2005, p. 3). Further to aspects of teachers' professional identity that we know from the above, in section 9.4, 'some of their identity is born with them, some is achieved, and some is thrust upon them'. (Coldron & Smith, 1999, p. 714). In the former instance, this may be genetic or be derived through interactions with family members working in the profession or be through other personal experiences. In the third case there has been exploration of some of the external factors that impact on a teacher's ability to develop their professional identity. This section will explore how teachers themselves go about achieving or developing their professional identity through autonomous activity and other aspects such as mentoring or coaching.

Interactions between teaching professionals, at any given stage of their careers may be subject to the respective individual's perceptions of their credibility. Teachers' ethos, more recently termed source credibility (Banfield et al, 2006, p.

65), has been described as a perception of the observer of how believable the source is. For example we may have a student observing an experienced teacher. Banfield et al (2006) suggest that teacher credibility is the degree to which a student perceives a teacher to be believable. McCroskey and Teven (1999) identify the three traits of credibility as being competence, trustworthiness and goodwill (or caring). Competence is defined as the degree to which the teacher has a grasp of their role (for example in terms of content knowledge or pedagogy), trustworthiness relates to perceptions of honesty and goodwill is a measure of how much the teacher cares about the student's best interests (McCroskey and Teven, 1999).

The first of these traits, competence, can also be described as a measure of an individual's expertise. The Cambridge Primary Review led by Robin Alexander (2010) deliberates the role of expertise in primary schools. Alexander et al (2010) introduce consideration of expertise by focusing on the role of the classroom teacher in delivering the National Curriculum 'that since 1988 many claim is inherently unmanageable' (2010, p 408). The Review suggests that the issue is less about the curriculum but about the expertise of teachers in what they can reasonably be expected to know and do. Primary school teachers are generalists, i.e. they teach all subjects laid down in the National Curriculum. Subject coordinators or leaders in specific subjects may support these teachers. These individuals, like general class teachers, even though they may have some qualification in their subject area, require continuing professional development in order to update their expertise or specialist knowledge. The problem is that, even before the advent of the National Curriculum (DES, 1988) it was unclear as to 'how much a curriculum generalist and how much a subject specialist' (Taylor, 1986, p 3) a primary school teacher should be. Indeed one teacher in this research observed that 'primary teachers have to do everything'. The occurrence of Middle Schools in the 1970s and 1980s did, in fact, have designated specialist teachers who taught their subjects alongside generalist colleagues. 'For most primary school teachers the expertise to which they lay claim is that of teaching' (Taylor, 1986, p 102) whereas 'for the rest, they would lay claim only to informal knowledge that may or may not be of use to colleagues' (Taylor, 1986, p102). As we have seen above, the teachers participating in this local Children's University initiative are acquiring specialist knowledge through informal learning. Can they get CPD elsewhere and how

prevalent is it? Are expectations too high? Taylor (1986, p103) goes on to say that teachers 'feel uncomfortable with the term expert'.

There are many factors impacting on a teacher's ability to develop expertise. These factors and, hopefully, the expertise are encountered during three stages of development. These are what Parry (1972) calls pre-service, induction and in-service development. Hubert and Stuart Dreyfus (1986) define the stages of development of expertise as:

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

It is difficult to measure or quantify these stages as it can be argued that such measurement may be subjective, even though many agencies have tried. Examples of these are the Training and Development Agency Professional Standards for Teacher (TDA, 2007) and, more recently, the Teachers' Standards (DfE, 2012) and the criteria drawn up by the Office for Standards in Education (Ofsted, 2012). There are many other reasons why this assessment is difficult and it is mainly due to the fact that teaching is such a dynamic process. For instance, teacher performance, even during a given day, can be variable in terms of quality due to tiredness or the emotional state of the teacher and the learners. Furthermore, performance in teaching one age group may not be replicated when working with learners of a different age or ability. In other words, at one finite time a given teacher may be competent whereas in another snapshot episode that teacher may be an expert.

Alexander et al (2010, p 416) suggest that 'exceptional teaching, like exceptional performance in any sphere, lies beyond mere competence and adds a high degree of artistry, flexibility or originality'. Berliner (2004) concurs in that he proposes that expert teachers perform with ease through instinctively using tacit knowledge as opposed to routines that may be acquired through pre-service training.

So just how does a novice become an expert? This may be answered by examining how they approach problems, difficulties or situations in the workplace. Daley (1999), in her study of novice and expert nurses, suggests that novices practice according to rules because they have little experience with real situations and that they rely on what they learned during their preparatory education. This may be the case with pre-service teachers and those who are either early in their career or who lack the confidence or experience to cope with given situations. Novices, when they encounter such difficulties, have no effective rationale and simply explore all of the unknowns. In addition they often seek validation of their practice from more experienced peers (Daley, 1999) and they felt the need to be 'spoon-fed' or directed in their learning or practice. In the classroom there may consequently be a reliance on what they were told during their training course in an effort to comply with government policy or, quite simply, may result in ad hoc selection of perceived appropriate practice.

Experts, having gained experience in a variety of situations and having reflected on discussions with peers, do not see all aspects of a problem as important or worthy of consideration (Daley, 1999). They are able to identify patterns and key factors relevant to given situations or problems. In practice, Daley (ibid) intimates that these factors are those that are important to the client and in the case of teaching and learning activity it is hoped that an important client may be the child. In her study of nurses Daley (ibid) found that experts were able to analyse a context and act efficiently and effectively. They were able to improvise where necessary based on previous personal and professional experience. Experts, in the nursing study, viewed formal learning as background material (Daley, ibid) and valued the informal learning gathered in the workplace.

Daley (ibid) discovered interesting points when exploring what novice and expert nurses felt hindered their learning. Novices said that time and the lack of in-service education sessions were major issues whereas experts highlighted political, organisational and resourcing issues.

This notion of expertise may be closely linked with a teacher's professional identity and herein lays a problem. False perceptions or misconceptions of expertise formed by one individual, through interactions with another, may have an impact on the professional development of those individuals in both positive

and negative ways. These false perceptions may be manifested due to poor lines of communication or lack of awareness of hierarchy and role.

Kumar (1997) highlights how students benefit from the medium of university in that they find themselves in a situation where they can learn from talented peers. Further to this, Kumar suggests that students learn more from each other than from their tutors. Universities are unique in that they are hotbeds for such activity. Indeed, the local Children's University provides a vehicle for such collaboration. Furthermore, perhaps because the activity is distant from the University, there is a different relationship between the tutor and the students. This, itself, is less formal and there is a shift in the professional identity of the tutor. This is a result of him taking on the role of class teacher rather than University tutor. It is a role that students valued in that they thought it was 'good to see (their tutor) teaching a class of children rather than modelling the role to them (the students)'. Such a situation provided opportunity for reflective dialogue based on real-time contexts. It also meant that there was an openness and honesty resulting from the realignment of tutor-student roles that culminated in professional dialogue and critique. Fevre et al (2000) suggest that informal learning in such a situation allows for identification of necessary attributes whereas these aspects need to be teased out of masses of unnecessary learning accrued through formal training.

The situation encapsulated by such a learning experience in this local Children's University may be equated to that of a Teaching School, as identified above, advocated by the current Government (2012) in that student learning takes place in a school context and is mentored by teacher and tutor. It is active learning where all stakeholders work with children in real time. It certainly embodies the spirit of a strong Partnership between school and Higher Education Institution.

According to Little (1990, p. 180) collegial work in schools is rare. This is the case in the sense that teachers are often the sole qualified practitioners in the classroom. More recently, they have had the support of teaching assistants and have also been expected to plan sequences of lessons within a team of peers. They remain the sole educators of their own class and active, voluntary, cooperative practice in the classroom is seldom implemented. In terms of team working, e.g. in planning, by teachers 'few claim that those relationships make

their way into the classroom' (ibid., p. 180). Further to this it has been observed that there are few instances when the school is as effective in educating teachers as it is for students (Shulman, 1983).

Inevitably, in situations within schools when there has been close collaboration, such collegiality has been shown to have some advantages. These advantages have been attributed to one core feature, that of overcoming the isolation of the classroom (Little, 1990). Little (ibid., p. 168) goes on to say that 'over time teachers who work closely together on matters of curriculum and instruction find themselves better equipped for classroom work.' She refers, here, to experienced teachers working closely together specifically on curriculum and pedagogy.

Thus we encounter mentoring at a different level or stage. Bush et al (1996) suggested that self-management in schools (a result of the central UK Government devolving power to schools in terms of budget and management) gave rise to an increased emphasis on the value of mentoring at various stages of a teacher's professional development within a school. Bush et al (1996) state that mentoring is an important element in a teacher's development through their career. How this is achieved is open to exploration of a specific school's circumstances. Some schools, Bush et al (1996) discovered, found that the mentee found it difficult to seek guidance from experienced staff because they did not want to be perceived as inadequate because it may have a bearing on issues such as their future employment or retention. Some schools recognized this and, for instance, paired the mentee with a mentor who was only slightly more advanced in terms of their development, for example student teacher with newly qualified teacher. At the time of their study Bush et al (1996) found that mentoring in such a way, in many schools, was inadequately implemented. They found that there needed to be a strong whole school commitment to the process that was driven by headteachers and senior members of staff. Bush et al (1996) found that this was the case in two schools visited and that there was some success in mentoring teachers at middle management level. The overriding constraint, it seems, is one of lack of time.

Many teachers, especially those during their induction year or soon after, value collegiality with regard to their professional development. Galosy (2004), in a study of formal induction programmes in the United States of America, found

that new teachers valued meeting with other teachers and reminds us of the perceived isolation inherent in the role of the teacher. The study focused on middle and high school science teachers and on an overriding need for science subject-specific support in their professional development. This support was for input on content knowledge and teaching methods. Interestingly, few of the teachers valued interaction with science content specialists or experts in this regard and would rather work with practising teachers or 'those who are working in the trenches' (Galosy, 2004, p. 14).

This raises the notion of credibility. In this it is the credibility of the science content specialist, in the eyes of the teachers, that is called into question. The teachers in this case did not hold the specialist in any great esteem but instead held the attributes of practising teachers in higher regard.

9.9: Summary

This review of literature has initiated a discussion of aspects of the theory in relation to substantive literature. On reflection, these features can be identified as:

- Raising aspirations and motivation
- Pre-service teacher education
- In-service teacher education
- Children's learning
- Pedagogy
- Expertise
- Complex systems

The following Chapter will explore these features in more depth in the form of a theoretical summary.

Chapter 10: Reflection on, and discussion of, key outcomes following the review of substantive literature

10.1: Introduction

The previous chapter provided insight into a range of literature related to core themes emerging from data that were identified in Chapters 6 and 7 but which were consolidated in Chapter 8. Thus, in a sense, Chapter 9 must be retrospective and it is hoped, of course, that it will provide indicators to inform future practice.

In this current chapter, the initial theoretical model is revisited and in the light of this, and with subsequent consideration of the literature, a comparison is made that identifies features that resonate with the literature but seeks to highlight perspectives that offer novel elements for consideration.

10.2: The unique nature of this local Children's University

Formation of this local Children's University was largely achieved through the support and involvement of a University Lecturer in Education, teacher education students, children and practising teachers. They formed the core of a Complex Adaptive System where the motives and actions of specific elements influenced or impacted on others.

In addition there was evidence of learning taking place at the same time and within the same context, at different ages and stages, for all of the above stakeholders. This situation is far from common. In fact, this local Children's University variant was described as 'unique' by the Manager of another local Children's University as she chaired a Quality in Study Support (QISS) recognition meeting (see earlier in Section 7.2.5) in which the merits of the local Children's University, central to this study, were evaluated and quality-assured.

This observation was further endorsed in an email communication from an Extended Schools' Coordinator who had been investigating potential collaboration with a local Children's University. With the opportunity to select a collaborating CU from several in close proximity she identified this study's local Children's University because of the unique model and particularly valued the roles of tutor and student teachers in supporting children's learning.

While there may be some indication, evidenced by teacher and student teacher comment, that a local Children's University learning activity may provide an ideal context for teacher CPD it has been demonstrated that it impacts positively on other learners too. These include student teachers, children and the university tutor. For the latter individual the local Children's University sessions that he delivered offered a chance to gather feedback about the learning needs of children, student teachers and teachers and to identify gaps in knowledge and expertise with resultant opportunities to address them.

The activity of local Children's Universities is monitored and 'quality assured' by the National Children's University. This is accomplished on their behalf by a process known as Quality in Study Support (QISS). Local Children's Universities are required to present a portfolio of evidence of their operational activity to a panel of recognised experts. The originality of this particular local Children's University and the approaches it made in impacting on the learning of stakeholders was described as 'unique' within the experience of the Chair of one of these accreditation panels. The contextual content of the portfolio describing the local Children's University was highly approved by assessors and by peers from other local Children's Universities.

In terms of impact, one other local Children's University, on witnessing the variant that is the subject of this study, made a request for supportive discussion with a view to adopting this model.

10.3: The local Children's University as part of a Complex Adaptive System

There are indications in the data arising from this study of a local Children's University that the questions posed by Lemke and Sabelli (see earlier in Section 9.2) can be explored in two ways. Firstly, in considering how changing priorities and problems at a local level impact on the larger educational system's agendas, it is apparent that the need for teacher professional development both generally and in particular in relation to science was evidenced by comments from teachers in this study of a local Children's University:

I think it will meet my needs of teaching science in that I hope I will look at a different way of teaching science and make teaching of science more exciting (Teacher 3, see Table 5 in Chapter 6)

At the moment it is tailored to the schools needs. If we have a particular focus such as literacy then the school will identify courses. But it is mainly focused on the school development. If we want to go on a course we are asked how relevant it is to the school, what we can bring back. (Teacher J, see earlier in Chapter 7)

These perspectives were corroborated by comment from a Parent Governor and a Learning Destination Leader:

But do they go in courses that actually give them different ways of looking at things and coming in with enthusiasm, I don't think they are that widely available. Obviously they have development days and people coming in but that is not the same as watching another person bring teaching expertise interacting with children in another way. I don't see that type of learning being readily available in terms of teachers having time to go and watch how other people do things. So that's valuable. (Parent Governor A, see Table 11 in Chapter 6)

I'd like to think you provide a stimulus for reflection and make it thought provoking so they can reflect on their own practice. So after you've been in to do your sessions they might be all inspired and look at how they can develop more creative learning opportunities. But it does make a difference if you are inspired by somebody to have a look at what you are doing. (Learning Destination Leader, see Table 12 in Chapter 6)

The problem of teacher's ability to secure CPD was also identified by Student Teacher K and by the new Head of Department:

I think it's because, all the time I've been in school, I don't think anyone has been on a science training course. It's just reading and writing. So maybe they haven't had one in such a long time so the new things that we are now taught of how to do it, they weren't taught like that when they were trained to be teachers. They haven't been shown since how to do different things. (Student Teacher K, see earlier in Chapter 7)

I think there is probably a big issue and a big need for support with science. I don't know what local authorities have the capacity to do. I think if you are able to offer that plus the CU they are getting a double whammy. (new Head of Department, see earlier in Chapter 7)

I think there is also a lack of science expertise amongst primary teachers. There is also the issue of teachers feeling that because they lack expertise they find it difficult to organise investigations which would be difficult to control, organise, etc. so they resort to demonstrating rather than actually getting children being hands on. I think all those factors impact on teachers' lack of confidence and lack of expertise. That may be one of the reasons why they want you to do science work and also your expertise in the area. (new Head of Department, see earlier in Chapter 7)

Problems in acquisition of Science CPD was recognised by the DfES and the Wellcome Trust in the United Kingdom and resulted in the network of Science Learning Centres built in cities around 2004 and 2005 (Wellcome Trust, 2005). Furthermore this activity spawned a concentration on Science, Technology, Engineering and Maths resulting in the STEM initiative and the incorporation of the National STEM Centre within the National Science Learning Centre in York in 2009. Unfortunately it would seem that the £51million initial investment by the DfES and the Wellcome Trust in the Science Learning Centres was not totally

worthwhile because conversations with teachers in this CU study (and with teachers further afield) suggested that they were not aware of the Centres or the courses of training on offer. It seems that the problems with professional development in science were not being remedied at local level. Although there were attempts through Government policy to address problems at local community level within schools, as evidenced in comments above, it is clear that other factors such as communication, staffing issues, time and funding were preventing successful solutions:

I think it was a lack of information on what we can do. (Teacher J, see earlier in Chapter 7)

Speaking at the moment about our school where science has been difficult because we haven't had a science coordinator. So you coming in has really boosted my science over the last couple of years and given me different angles. (Teacher M, see earlier in Chapter 7)

From this it seems that this local Children's University provides a vehicle through which some schools at a local level are able to access science professional development simultaneously with provision of learning experiences for their pupils.

As seen earlier in Chapter 6 (Section 6.3 in particular) the data suggests that teachers in some schools have a need for professional development in the area of science. This desire for science input has been observed in at least one other local Children's University in SE England that stated they had requests from schools in their region for Science, Technology, Engineering and Maths (STEM) learning activities (this was ascertained by the researcher during personal communication with the Chair of the QISS panel as part of a QA process (alluded to at various points in this thesis for example in Section 3.2). This resonates with the findings of Stephens and Richey (2011) and also the Education Commission of the States (2011, p 1).

The work of Stephens and Richey (2011) and Davis and Sumara (2010) highlight the influence that various stakeholders can have on a system. Chapter 9 introduced Davis and Sumara (2010) description of these relationships as 'nested processes'. Interviews with teachers suggest that what we appear to have in this local Children's University is a situation where the system is clouded by stakeholders' perceptions of each other and of each other's roles. The teachers commented that they felt comfortable with the university tutor's

expertise because it was apparent that the tutor had been a teacher, that he could still teach and that they wished their own university tutors would have been willing to be observed teaching as evidenced by comments such as:

Well it's changed quite a lot in the last five years. I think there is a lot more effort on the part of Universities to work with other institutions. So it is more humanised. You are not seeing a lecturer as an academic boffin. I don't feel intimidated by your knowledge, which is degree level, and I know we can speak as equal colleagues. (Teacher L, see earlier in Chapter 7)

I think that is one of the most important things. I never saw a lecturer teach a child while I was at college. I think it's about, and I'll use the word expert, seeing someone teaching who is relaxed, calm, not phased by things – I think it is worth ten lectures in a room where you are just learning the theory. (Teacher L, see earlier in Chapter 7)

They intimated that it supported credibility. It seems that factors impacting on this include feelings associated with trust and the whole system is heavily influenced or even skewed by Government policy in England and Wales. Teachers interviewed said that one of the overriding factors impacting on their practice, and on education more widely such as in Initial Teacher Training and Induction into the profession, was policy laid down by the Government in England and Wales. They were sceptical of Government motives in this regard:

I know that there is a big push towards apprenticeships in schools. That is not necessarily a bad thing but I think it is important not to lose the theoretical or academic underpinnings to make sure it is rigorous. Teaching isn't just a craft is it? You can't just devolve it down to A, B, C. There has to be an understanding that things are evidence-based. I think that would be lost if there was a rejig to school-based apprenticeships. (Teacher M, see earlier in Chapter 7)

No, I think they are completely fettered by politics. I think the SATs have done more to harm primary education than anything else. We are totally driven by them. It's not about the children's progress. It is purely about a League table. (Teacher L, see earlier in Chapter 7)

I think the politics does impact on students but if you are creative and imaginative there are ways to work within the system. Although we have this framework that we have to stay within you have to think outside the box. I think it has always been like that. If you are happy to not be like that you can plod along and not be inspiring. (Teacher L, see earlier in Chapter 7)

Obviously there is talk of the new National Curriculum but the irony is that it will only be imposed on those schools that are not Academies. So the schools that reflect his ideology are not going to be forced to teach his new curriculum, which is a bit bizarre. There is a lot of emphasis on facts and knowledge. I don't think that is a bad thing but there is a lot of argument about what that knowledge should be. If I was Secretary of State I would be looking at what the evidence says rather than look at my past or my childhood and what worked for me then. (Teacher M, see earlier in Chapter 7)

In a sense the nature of the local Children's University Complex Adaptive System, itself a sub-system nested alongside other sub-systems extending into

at least a national network, is the lubrication that oils the many constituent components of the emerged theory.

The system of curricular, extracurricular and hidden curricular learning evident in local CU learning experiences, relating to the children, was complex. The interplay between the various learners namely children, teachers, student teachers and university tutor, in striving to meet their learning needs (amounting to professional development on the part of the practitioners) added to this complexity. The impact of external drivers, such as Government League Tables balanced against the need for formative assessment of learning, adds more complex influences to the context. Some of these elements can be found in Table 18 below.

There are suggestions within the data identified in Chapter 6 (for instance in Section 6.5 in Table 12 in relation to pedagogy; in Section 6.6 Table 13 in relation to expertise) that requirements for teachers to adhere to a standardised curriculum coupled with a lack of local professional development are hindering the possibility of teachers developing creative pedagogy. In particular it is worth revisiting comment from a parent-governor in relation to this aspect when they said:

But do they go in courses that actually give them different ways of looking at things and coming in with enthusiasm, I don't think they are that widely available. Obviously they have development days and people coming in but that is not the same as watching another person bring teaching expertise interacting with children in another way. I don't see that type of learning being readily available in terms of teachers having time to go and watch how other people do things. So that's valuable.

In addition a Learning Destination Leader, a former teacher, supported this by saying in section 6.9, table 15:

I'd like to think you provide a stimulus for reflection and make it thought provoking so they can reflect on their own practice. So after you've been in to do your sessions they might be all inspired and look at how they can develop more creative learning opportunities.

With regard to the curriculum, a Head of Department in section 6.9 observed:

I think its good for the pupils and the staff by making them think about how they can deliver the curriculum perhaps in a more innovative and exciting way. I think that sometimes the work and energies of staff are sapped by ensuring that people get certain grades at certain stages and I think involvement with CU does open hearts and minds and gets people to look at things from a different perspective.

Table 18: A comparison of emerged data and substantive literature relating to the local CU context as a Complex Adaptive System

Key Feature of Theoretical Model	Example of Key Linked Evidence	Agreement found in Literature	Novel aspects apparent (with elements diverging from literature)
Complex Systems	<p>No, I think they are completely fettered by politics. I think the SATs have done more to harm primary education than anything else. We are totally driven by them. It's not about the children's progress. It is purely about a League table. (Teacher L)</p> <p>'We know we've got a Strategic Plan and one of the themes is becoming an Engaged University. A university anchored in its local community. What greater opportunity than by using activities from the CU? It is also about 'What are universities for?' They have a role in their local community and region to support people that live in that region. There is a fundamental ethical reason why it's important to do it.' (Head of Dept.)</p> <p>'I think the politics does impact on students but if you are creative and imaginative there are ways to work within the system. Although we have this framework that we have to stay within you have to think outside the box.' (Teacher L)</p>	<p>There were many instances when actions by those higher up the chain of hierarchy influenced the actions of those lower down. This was common when Government Policy impacted on HEIs, schools, teachers and children. It was also apparent in relation to things like teacher CPD and professional identity within schools. This is exemplified in Lemke et al (1999) research which found that many individual educational projects aim to contribute at various levels to overall systemic reform, but we need to find ways to better understand how these projects may interact with one another and with the existing educational system as a whole. The research goes on to discuss pedagogy and how learners could have access to older students, retired professionals and community volunteers. Conversely, it queries the impact of the lack of time that teachers may have to devote to learners.</p>	<p>The pedagogy employed is one where it is not effective to 'play safe' but to leap into the Zone of Complexity or even flirt with the 'Edge of Chaos' (Bore and Wright, 2009).</p> <p>Learning on several levels and from the perspectives of children and various practitioners was complex in terms of learner-centredness and the spontaneity arising from personal recognition of need.</p>

Similarly, in Section 7.2.1 a teacher made comments regarding professional development opportunity and aspects of learning in relation to the National Curriculum objectives:

It has given the children a different view because it is wider and not just focusing on what the National Curriculum says, although the activities are perfectly in tune with that it is more about the whole child than it is just about learning outcomes. I'm not denigrating learning outcomes at all in that because they are received as well. It's almost as if the children forget about the learning outcomes in a good way because they are actually engaged with the task and not thinking about it as work. They are enjoying learning for learning's sake.

As has been observed pedagogy was a key category emerging from data. There are also signs that the local Children's University is providing an opportunity for teachers to observe effective or 'best' practice (described by Adams (2008) in Section 9.5.4.2) and to access professional development through informal learning. This is also described by student teachers who said 'So it was good to see the different approach, the more informal, sort of idea...' and 'It was interesting to see how it worked being really informal...'

The effective practice undertaken by the tutor and observed by teachers and students teachers is described in the following section.

10.4: The pedagogy

In addition to the comments made by student teachers (see examples above) and the passing references to tutor expertise made by teachers, the latter also stressed the value that they placed on observing this practical pedagogy. Some of their comments are evidenced below:

I thought that when you came in it was absolutely excellent from the point of view of the pedagogy there. I think as well that the practical nature of what you do and the resources that you bring in are of real benefit to the children. (Teacher M)

I think teachers get new ways of working. I think what teachers get are children who are engaged and motivated. (Teacher W)

I think it will meet my needs of teaching science in that I hope I will look at a different way of teaching science and make teaching of science more exciting. I'm looking for some inspiration. (Teacher 3)

...that we do not always give them enough opportunity to develop a practical approach...(Headteacher of School 2)

This is corroborated by Student teacher K who said, in commenting on tutor's input in CU sessions:

Also to share what you (the tutor) know about science with other teachers so they can then teach that way as well rather than what I said earlier about sitting down

and writing. I think if you do something they've never thought of it shows them how to teach a hard concept so they can show that to their next class. They can share it with their colleagues. I mean, like, teaching.

Further to the views of teachers, the son of Parent Governor L (in comparing the science teaching of his teachers with that experienced during CU sessions) stated that he wanted to undertake a career as a science education tutor and he said:

...because otherwise science is boring. He [the child] says I'm going to teach teachers how to teach science in a fun and exciting way.

These comments add to some of the references evidenced in Section 10.3 above and it is clear that the inspiring pedagogy described as innovative by Teacher 3 and by the interested non-ITE Head of Department (see quote below), arises from some teachers' reluctance to adopt a pedagogy that is based on practical investigation to be carried out by the children:

I think its good for the pupils and the staff by making them think about how they can deliver the curriculum perhaps in a more innovative and exciting way.
(interested non-ITE Head of Department)

It may also be based in a lack of confidence to teach this way, as described by Student Teacher S:

I think it's done in an enthusiastic way at CU. Perhaps it's more enthusiastic than the teacher would be. If they are plumping for it, it might be because the teacher is not very confident with it so they might not be as enthusiastic.

Teacher M endorses the feature associated with confidence:

I think science, a bit like music and PE, can be seen as a technical subject that teachers don't always feel as confident delivering. It's also a more practical subject so, being honest about myself, I find that the subjects that are more abstract and less resource-heavy can be easier to teach. I'm not as confident with the practical side of things. It's not an excuse because you need to be better organised and resourced. Sometimes when you are pressured for time then those things can get squeezed.

The Learning Destination Leader added:

Probably, lack of confidence within the school to engage kids with science. I'm just guessing really. From my experience in the classroom some teachers are very unconfident with teaching science because they don't have a full grasp of it themselves.

To be fair, it should be pointed out that many of these ideals are found in the values or underpinning intentions of the science National Curriculum (1988). A big assumption is made that all teachers will have the confidence and expertise to be able to advocate them. It would seem, from data gathered as part of this

local Children's University study, that some teachers do not possess the necessary attributes.

These statements may be of some use in evaluating local Children's University activities. It may be worthwhile providing an example of this in terms of this situation. The tutor delivered a science activity where children investigated different foam bath products and were asked to identify the 'best' one. There was very little other input and the children's teacher, in evaluating the session, said that first and foremost she was impressed by the 'idea' that the children could make their own choices. This is despite the fact that the National Curriculum indicates that children should be able to plan their own investigations in Key Stage 2 (7 to 11 year olds) and it is a matter of concern that the teacher was not implementing such an approach.

There may be reasons for this rooted in the training and professional development of teachers as described below. Further to this there may be other pressures placed on teachers such as an overcrowded curriculum or assessment regimes:

I'm not as confident with the practical side of things. It's not an excuse because you need to be better organised and resourced. Sometimes when you are pressured for time then those things can get squeezed. (Teacher M)

I know from talking to children in primary schools that they have been put off science. It may be that they have not done any practical investigations. If they had they would have been excited and engaged with science, I would have thought. I think there has been a lack of opportunity to do that because of SATs pressures. (researcher's new Head of Department 'A')

Another explanation might be that there has been a huge focus on maths and English and in the primary school we are cramming them with facts for the SATs I'm afraid to say. (researcher's new Head of Department 'A')

we haven't got those constraints that you might have within a school, say SATs and curriculum pressures. (Learning Destination Leader)

I think that sometimes the work and energies of staff are sapped by ensuring that people get certain grades at certain stages and I think involvement with CU does open hearts and minds and gets people to look at things from a different perspective. (interested non-ITE Head of Department)

It is a fact that both formal and informal learning is taking place in any given learning experience provided by this local Children's University. There is some teaching on the part of the person leading the sessions but the pedagogy is such that it may foster informal learning by teachers, students and pupils.

Various stakeholders identified this notion and it adds to the robust triangulation achieved throughout this study:

So it was good to see the different approach, the more informal, sort of idea and being able to talk to them freely... (Student teacher following intervention in School 1).

It was interesting to see how it worked being really informal and then getting down to some work. (Student teacher in School 1)

The students worked with groups and they were much more...down to their level than possibly a teacher would be. It would be much more formal. (Teacher 2 in School 2)

They can understand that education isn't just about school. You are always going to be learning and even the ones who are maybe not academic, they can engage with it because they are seeing other ways of learning. (University Widening Participation Manager)

I think for the children it makes it less of a learning experience but more of a social experience where they happen to take on board things rather than sitting down and feeling that they HAVE to learn. (Student Teacher K)

One question is particularly relevant in the context of the study of this local Children's University was contained in the NECSI Working Group 3 Report (1999). The report's authors, Lemke et al., ponder the benefit to learners of them coming into contact with a wider variety of adults and the possibility that these adults assume the role of the teacher. Stakeholders commented on this:

...it gives them the opportunity to work with adults that they view as trusted adults, erm, so they just get the chance to develop their social skills, their self-confidence, self esteem and aspiration really. (Headteacher of School 2)

Working with an adult who to them is a science teacher, a science specialist in a group where they get a voice. The quieter ones who don't always get a voice – it is giving them the opportunity. (School 4 Teacher)

It brings students in, so it brings it alive so although primary school teaching is very good, it's different. It's almost like bringing in someone really good, TV-type learning, into the classroom... I think it's someone coming in, external, with enthusiasm, with a new way of looking at things, with a new way of facilitating that child's development and that group's development. (Parent Governor A)

Lemke et al suggest that learners could have access to older students, retired professionals and community volunteers. Conversely, it queries the impact of the lack of time that teachers may have to devote to learners and that this may have implications for the timetabling of session times (as evidenced by some quotes from stakeholders above). Finally it questions the impact of changes in pedagogy against changes in curriculum.

This researcher, as an experienced educator, believes that any given moment, as part of a learning experience, becomes a teachable or pedagogical moment

when the teacher seizes it and uses it to the advantage of the learner. As we have seen, if we agree that informal learning is taking place in a local Children's University setting, there may be a case for arguing that the incidence of teachable moments is multiplied as a result of the redefined stance adopted by teacher and learner in such a situation which is subject to the simultaneity defined earlier (Davis and Sumara, 2010, p. 857).

In considering this it may be postulated that the incidence of teachable moments may be multiplied, within less formal local Children's University sessions, as a result of the teacher and the learners willingness to take more risks at such points. As observed in Chapter 9, Raths (1971) discussed a blend of objective-led and non-specific objective learning experiences that Smith (2006) suggested would allow the educator to 'go with the flow' in response to learner-need. This is evidenced well in a quote from Parent Governor A:

You are because you have the ability to go in there and just hit the children with lots of activities, very quickly. I think that hitting them with a lot of activities and making it visual and introducing the humour with it, is a different way to how primary schools traditionally educate in science. So you may not see that yours is fast-hitting, gets them interested, it makes them think and is designed to be this really quick way of grabbing their attention.

In other words they are willing to move from region 1 in Figure 11, which is based on work by Bore and Wright (2009) after Stacey (1996) , into region 2 the zone of complexity. This taking of risks, in pursuit of productive educational outcomes, thereby undertaking creative approaches was observed succinctly by the Learning Destination Leader:

So they are getting someone in who is an expert in the field and also a creative teacher you can create a really inspiring science session. It's one of those subjects where you can't sit down and learn it. It's about experiencing it hands on...Creativity is a key one. If you are creative, no matter what you are teaching or what environment you are in you will make it innovative and inspiring for the kids. If you haven't got that creativity, it's not engaging.

It may be that, as a result, they exhibit the 'innovative practice' referred to by many of the stakeholders (see above). In essence, at such teachable moments, the teacher and the children are not content with 'playing safe' and have the confidence to engage with the curriculum more creatively, to have high expectations that challenge the norm and they may even touch upon the anarchy suggested within region 3 in Figure 11. The more open, informal, relaxed and learner-centred setting of a local Children's University setting may support this situation.

As seen in Chapter 9, Wellington and Ireson (2012) consider formal and informal learning in science. Teacher stakeholders' requests for science input by the tutor will be discussed in Section 10.5.

It was also postulated earlier that teachers were acquiring professional development in science at a local level and on an individual basis through informal learning. Similarly, by the very characteristic nature of a Children's University, the pupils were accessing learning in a less formal way but with outcomes that still resonated with the requirements of the National Curriculum. Such a situation is not without precedent as seen, for instance, in the work of Campbell and Kane (1996), Darling-Hammond (1990) and Harwell (2003) as discussed in the previous chapter.

In essence this mirrors the situation that evolved in the formation of this local Children's University where teacher educator and teacher trainees engaged with schools by delivering a blend of formal and informal learning with an emphasis on science as required by teachers. This was highlighted by various stakeholders:

Also when you take students in to see how you teach is another way of teaching them so you are actually showing what your practice is rather than just talking about it in a lecture theatre... I think they probably get the expertise of the people running the activities so for example you going into a school, they will learn from what you do, which they can then pass on to other kids. So there is kind of like a snowball effect to it. Also they are working with students. They, everyone learns from everyone else really. Students are learning, the teachers are learning from the students about how to communicate effectively in different ways. (Widening Participation Manager)

I think the main benefit is the students going into schools and seeing one of their lecturers going into school and teaching. So they are always going to get the main benefit from it. (Widening Participation Manager)

They (the teachers) are going to pick up things from it and it's a support for them, I would hope, within the classroom. As a governor we look for anyone coming into the school with a different approach as being a learning experience for everyone involved. Teachers, leadership, governors as well as the children. (Parent Governor A)

Obviously they have development days and people coming in but that is not the same as watching another person bring teaching expertise interacting with children in another way. I don't see that type of learning being readily available in terms of teachers having time to go and watch how other people do things. So that's valuable. (Parent Governor A)

I'd like to think you provide a stimulus for reflection and make it thought provoking so they can reflect on their own practice. So after you've been in to do your sessions they might be all inspired and look at how they can develop more creative learning opportunities. (Learning Destination Leader)

As discussed earlier in Chapter 9 there is a precedent set by NSF where they brought together Universities, Colleges, and Professional Science Associations to undertake informal learning in science. It is interesting that this arrangement resembles the situation set up within this local Children's University in that it embodies informal learning with a strong science focus. In addition the tutor leading local Children's University sessions is also an active member of a science professional association who is working within a Higher Education institution.

The NSF also funded much smaller projects. One such project, the Informal Learning and Science in Afterschool initiative (ILSA), bears comparison with the activities arising from the formation of the Local Children's University. ILSA investigated the infrastructure and impact of learner participation in afterschool provision. That provision was labelled science learning in 'typical' (Fenichel and Schweingruber, 2010, p. 190) non-science-specific activity. It mirrors activity undertaken through the local Children's University in that the latter has a focus on science and that it addresses this through standard science pedagogy and through linking science to other subject areas. In other words these curriculum areas, such as drama or art, provide a context for the science:

In terms of the classroom, the primary school environment. I'm not a primary school teacher but a lot of the ways that the subjects are taught, it seems to me, watching your video and the things you have produced... It's different, more interactive, it's fun, it uses the children's perspectives. It strives at really making the learning enthusiastic. It brings students in, so it brings it alive so although primary school teaching is very good, it's different. It's almost like bringing in someone really good, TV-type learning, into the classroom. I don't know if you've tried to bring that together. Oh what are they called, science programmes aimed at Y5 and 6. It's that type of active learning and it's fun. (Parent Governor A)

The issue of tutor pedagogy was very closely related to expertise (discussed in Section 10.4.1) and, furthermore, the professional development of teacher education students (see Section 10.5.1) and teachers (see Section 10.5.2) partly because these elements are apparent in a complex adaptive system. The first of these areas, pedagogy, is summarised in Table 19 below.

Table 19: A comparison of emerged data and substantive literature relating to pedagogy

Key Feature of Theoretical Model	Example of Key Linked Evidence	Agreement found in Literature	Novel aspects apparent (with elements diverging from literature)
Pedagogy	<p>'I think it's done in an enthusiastic way at CU. Perhaps it's more enthusiastic than the teacher would be. If they are plumping for it, it might be because the teacher is not very confident with it so they might not be as enthusiastic.' (Student S)</p> <p>'They [the children] like it when they think they know more than you. I think it is another thing that teachers are scared of.' (Student S)</p> <p>'It's probably stuff they could be doing in normal lessons isn't it? That those teachers could be doing themselves but they don't generally. It's in a different environment as well, not just the classroom.' (Student K)</p> <p>'there were issues around this way of learning which I think, you know, there were barriers [with teachers] to begin with but as it progressed we saw that these were overcome.' (Headteacher, School 2)</p>	<p>'informal and undirected learning in science will be of increasing importance – the so-called ICT revolution will ensure this. Learning will take place in a variety of contexts...' (Wellington and Ireson, 2012, p. 283)</p> <p>'learning without limits becomes possible when young people's school experiences are not organised and structured on the basis of judgements of ability' (Hart et al, 2004, p3).</p> <p>Jeffs and Smith (2005) state that non-formal educators pursue "bottom up' (learner-centred) or negotiated curriculum building.</p> <p>'the realm of informal learning in science is an under-used and under-studied area. If we knew more about it, or simply took more notice of it, children's science education would be greatly enhanced' (Wellington and Ireson, 2012., p. 283)</p>	<p>This approach requires thorough identification and provision of practical resources. It also benefits from a confidence in pedagogical ability, resultant enthusiasm, trust in the children and a willingness to accept and explore unexpected outcomes. The teacher is not the fount of all knowledge and children's ideas should be valued and acted upon.</p> <p>The pedagogy is not fully learner-centred mainly due to the need for pre-determined resource implications.</p> <p>Wellington and Ireson identify the need. This local CU attempts to address it.</p> <p>The tutor's enthusiasm, openness and expertise instilled a notion of trust that gave teachers a confidence in their ability to adopt similar pedagogical ideas.</p>

Some teachers' rigid adherence to a predetermined structured curriculum allied with their more formal pedagogical approaches meant that they placed value on

the perceived innovation of the tutor's more relaxed, enthusiastic style in delivering creative learning experiences through non-formal, more learner-centred pedagogy. There were indications that teachers would adopt the ideas even if, in the case of one teacher, the pedagogy caused initial friction. Again, as also seen above in Table 19, the real-time practical classroom delivery by the tutor (acting in a sense as an external change agent) proved it was a worthy approach and teacher colleagues and teacher education students added their endorsement.

10.4.1: The expertise of the tutor

The teachers felt that they had to be 'Jack of all Trades' (term used by a Teacher in School 4) in teaching a wide variety of subjects but that they lacked expertise in some subject areas, principally science. They valued the expertise of the university tutor and the latter, in this situation, can be viewed as their mentor. In this latter respect a teacher (see section 7.2.1) stated:

Speaking at the moment about our school where science has been difficult because we haven't had a science coordinator. So you coming in has really boosted my science over the last couple of years and given me different angles.

In Section 6.5, Table 11 we saw that teachers thought:

It gives children a chance from someone who knows a lot about science teaching in the same subject. It gives children a perspective on science that somebody with more science background will be able to give them. **As primary school teachers we have to be Jack-of-all-Trades and it's nice for children to have an expert teaching them on a particular subject.**

In the context of the local Children's University the teachers in participating schools were keen to observe the pedagogical expertise of the university tutor. The teachers (and other stakeholders such as University Heads of Department and Student Teachers) described this practice as innovative but may be simply an ability to have confidence in science subject knowledge and to be able to 'bring it alive' in such a way that it is accessible by the learner.

There was discussion of various aspects of expertise and credibility, and their relationship with professional identity, in Section 9.8. One aspect in particular that emerged from data in this study related to the findings of Alexander (2010) and Berliner (2004). It concerned the features of artistry and confidence, on the part of the expert, that allowed the latter to be flexible and to follow instinct in using subject and pedagogical knowledge. This echoes the statement, within

data collected, from one teacher who said, in commenting on the tutor's pedagogy in the context of a local CU learning experience:

I never saw a lecturer teach a child while I was at college. I think it's about, and I'll use the word expert, seeing someone teaching who is relaxed, calm, not phased by things... (Teacher L)

In turn, this begs the question of whether teachers should be educated rather than trained and leads to deliberation over whether academic departments should refer to their provision as Initial Teacher Education or Initial Teacher Training. Ofsted's stance appears to align with the former as they call their inspection framework the 'Initial Teacher Education (ITE) inspection handbook' (Ofsted, 2012).

Section 9.8 described Daley's (1999) work with novice and expert nurses and explored the transition from former to latter. It identified how expertise is acquired through experience and through reflection on this through discussion with peers. It was stated in Section 9.8 that experts are able to identify patterns and key factors in specific contexts. In practice, Daley (ibid) intimates that these factors are those that are important to the client and in the case of teaching and learning activity it is hoped that an important client may be the child. Indeed, Parent Governor A highlighted this child-centred aspect of the pedagogical expertise evident in the tutor's practice:

In terms of the classroom, the primary school environment. I'm not a primary school teacher but a lot of the ways that the subjects are taught, it seems to me, watching your video and the things you have produced... It's different, more interactive, it's fun, it uses the children's perspectives. It strives at really making the learning enthusiastic.

In her study of nurses Daley (ibid) found that experts were able to analyse a context and act efficiently and effectively. They were able to improvise where necessary based on previous personal and professional experience. Experts, in the nursing study, viewed formal learning as background material (Daley, ibid) and valued the informal learning gathered in the workplace. This may be the case with activity in local Children's University sessions where practising teachers learn 'innovative' pedagogy (as evidenced in Section 10.4) from the perceived expert tutor because they have trust in the practise of the latter. This perception of trust is apparent irrespective of the teacher's stage of professional development (student teacher to more experienced teacher):

You are not seeing a lecturer as an academic boffin. I don't feel intimidated by your knowledge, which is degree level, and I know we can speak as equal colleagues. (Teacher L, see earlier in Chapter 7)

I think it will meet my needs of teaching science in that I hope I will look at a different way of teaching science and make teaching of science more exciting. I'm looking for some inspiration. (Teacher 3)

Also to share what you (the tutor) know about science with other teachers so they can then teach that way as well rather than what I said earlier about sitting down and writing. I think if you do something they've never thought of it shows them how to teach a hard concept so they can show that to their next class. They can share it with their colleagues. I mean, like, teaching. (Student Teacher K)

It is good for your (the Tutor's) credibility. (Student Teacher involved in School 1)

The 'expert' tutor managing this local Children's University felt the need to 'put something back in to the profession' and this was something that Daley (ibid) found in interviewing expert nurses.

Novices said that time and lack of in-service education sessions, as evidenced above in Sections 10.4 and 10.5, were major issues whereas experts highlighted political, organisational and resourcing issues. This resonates with the situation of teacher education students and experienced teachers in the local Children's University. The students place a lot of emphasis in issues related to their preparation for practice whereas, increasingly, experienced teachers are preoccupied with factors related to the system:

It was the first chance I'd had to work with older children as well, in school, because I'd never worked with older children in school before (Student Teacher in School 1)

I think it has in a lot of respects because, in the school that I am in at the moment, you don't get to see many science lessons. Having that sort of science experience once a week, for 8 weeks. So it was really good to see 8 different lessons whereas when I was in school I would hardly have seen any because we had another teacher in and we had another trainee teacher in school. So it was good to get some extra science lessons in to see how they worked. (Student Teacher in School 1)

No, I think they are completely fettered by politics. I think the SATs have done more to harm primary education than anything else. We are totally driven by them. It's not about the children's progress. It is purely about a League table. (Teacher L, see earlier in Chapter 7)

we haven't got those constraints that you might have within a school, say SATs and curriculum pressures. (Learning Destination Leader)

I think that sometimes the work and energies of staff are sapped by ensuring that people get certain grades at certain stages and I think involvement with CU does open hearts and minds and gets people to look at things from a different perspective. (interested non-ITE Head of Department)

Further to this, Kumar suggests that students learn more from each other than from their tutors. The local Children's University provides a vehicle for closer

collaboration between these students in an active practical sense but also furthers close working between tutor and student teachers:

Getting to see science (as taught by your tutor) in a more fun way, like more interesting way, being given ideas of how to teach difficult concepts but making it more fun and interesting for the kids and getting them involved. (Student Teacher in School 1)

I think the main benefit is the students going into schools and seeing one of their lecturers going into school and teaching (Widening Participation Manager)

A huge advantage for them (the student teachers) is that it is giving them additional opportunities to work with children in schools and to work with them in perhaps a less restricted way than the routine curriculum. So they are engaging with children and helping their aspirations. It is a huge plus for those training to teach. (New Head of Department)

Furthermore, perhaps because the activity is distant from the University, there is a different relationship between the tutor and the students. This, itself, is less formal and there is a shift in the professional identity of the tutor. This is a result of him taking on the role of class teacher rather than University tutor. It is a role that students valued in that they thought it was:

useful seeing your lecturer actually teaching children as opposed to demonstrating it with us (Student Teacher in School 1)

Such a situation provided opportunity for reflective dialogue based on real-time contexts. It also meant that there was an openness and honesty resulting from the realignment of tutor-student roles that culminated in professional dialogue and critique:

I like your model of getting students to come in and do this. I like the fact that it is led by experienced educators and is supported by undergraduates because they do have the ability to facilitate and be enthusiastic and design different types of learning experiences. Students under qualified staff supervision (Parent Governor A)

Also when you take students in to see how you teach is another way of teaching them so you are actually showing what your practice is rather than just talking about it in a lecture theatre. So you can bring in real life situations... (Widening Participation Manager)

As seen above, teachers observed the shift in tutor-student teacher relationship in the CU context as opposed to University setting:

I think that is one of the most important things. I never saw a lecturer teach a child while I was at college...I think it is worth ten lectures in a room where you are just learning the theory. (Teacher L)

Further to this, Fevre et al (2000) suggest that informal learning in such a situation allows for identification of necessary attributes whereas these aspects

need to be teased out of masses of unnecessary learning accrued through formal training.

In addition to this, the teachers have said that they themselves (as evidenced in quotes above) learn from this arrangement. In effect they are acquiring real time Continuing Professional Development in context. They are having pedagogy modelled, and subject knowledge demonstrated (see quotes from earlier in Section 10.4), by what they have called an 'expert' (see opening quote in this section). Further to this Daley (1999), in her study related to nurses, found that because experts situated their learning in practical contexts, then any discussion around such cases needs to be based on actual practice examples of the experts involved, not the decontextualized case studies that are often used in much CPD education. The real-time context of a CU session allows for this and there are many quotes to this effect above (see Section 10.4).

As seen above a session, in a host school, of this local Children's University has seen professional development of three practitioners. These were the student teacher, the experienced teacher and the School of Education tutor. In a sense the former two teacher-types had the opportunity to develop their content and pedagogical knowledge through observation of the modeling of practice by the tutor. The tutor used the situation to sharpen his skills and demonstrate his expertise whilst conscious of the scrutiny by his students and host teachers. This, of course, is in the context of a real-time learning experience undertaken by a class of children.

I think they (the teachers) probably get the expertise of the people running the activities so for example you going into a school, they will learn from what you do, which they can then pass on to other kids. So there is kind of like a snowball effect to it. Also they are working with students. They, everyone learns from everyone else really. Students are learning, the teachers are learning from the students about how to communicate effectively in different ways. (Widening Participation Manager)

The situation involved elements of trust, credibility and perceptions of expertise as identified above. This is further complicated by the fact that these stakeholders barely knew each other and yet they found themselves participating in support of the children's intended learning outcomes. In a sense they were party to accelerated collegiality.

It was seen, above, that teachers were confident in the expertise of the tutor and that they did not feel intimidated by the tutor:

You are not seeing a lecturer as an academic boffin. I don't feel intimidated by your knowledge which is degree level and I know we can speak as equal colleagues.
(Teacher L)

Galosy (2004, p. 14) found that teachers preferred to work with practising teachers or 'those who are working in the trenches' and this is apparent in the quote above in terms of the prevailing 'flat' hierarchy.

This raises the notion of credibility. In this it is the credibility of the science content specialist, in the eyes of the teachers, that is called into question. Teachers in taking part in the local CU did not hold the specialist tutor in any great esteem but valued his expertise because they had seen it being applied 'in the trenches'.

In the case of this local Children's University the university tutor delivering learning activities was referred to as an expert (see opening quote of this section). On revisiting this aspect in subsequent interviews it was found that the same teachers were not really comfortable with the term. They described it as emotive (Teacher L) and preferred the use of the term credibility. Nevertheless the teachers did resort to using the term expert occasionally as if they could not avoid it. They valued the expertise of the tutor, one teacher said typically:

so you coming in has really boosted my science over the last couple of years and given me different angles (Teacher M)

The teachers wanted subject-specific support in preference to more generic support and this is currently a need of teachers encountered in forming the local Children's University activities. The teachers said that their induction programme did help them to interact with other practitioners to support them through their early time in teaching but they felt that they would not receive science-specific input unless the programme was aimed specifically at that, in other words that it was specialist rather than generic:

If we have a particular focus such as literacy then the school will identify courses. But it is mainly focused on the school development. If we want to go on a course we are asked how relevant it is to the school, what we can bring back. (Teacher J)

The expertise of the tutor, as perceived by teachers and teacher education students in particular, had a bearing on his ability to convey subject and pedagogical knowledge. This feature is identified in Table 20 below. The fact that the tutor was able to demonstrate pedagogy in 'real time' in a classroom context built trust between teacher and tutor. Teachers valued the experiences

and the fact that they could see that the tutor was an accomplished practitioner. The fact that such collaboration was sustained over a period of time, incorporating several visits, enabled continuing reflection and discussion of the degree of positive impact on children’s learning with resulting implications for future practice. Such a knowledge transfer situation was unique to teachers and distinct from their accustomed diet of having aspects of professional development delivered to them by unfamiliar trainers in contexts away from the classroom and thus prohibiting analysis of its impact on children’s learning.

Table 20: A comparison of emerged data and substantive literature relating to expertise

Key Feature of Theoretical Model	Example of Key Linked Evidence	Agreement found in Literature	Novel aspects apparent (with elements diverging from literature)
Expertise	<p>‘Speaking at the moment about our school were science has been difficult because we haven’t had a science coordinator. So you coming in has really boosted my science over the last couple of years and given me different angles’ (Teacher M)</p> <p>‘I think teachers get new ways of working.’ (Teacher W)</p> <p>‘I think if you do something they’ve never thought of it shows them how to teach a hard concept so they can show that to their next class. They can share it with their colleagues.’ (Student K)</p> <p>‘I think there is also a lack of science expertise amongst primary teachers. There is also the issue of teachers feeling that because they lack expertise they find it difficult to organise</p>	<p>Mentors’ subject expertise is important (Campbell & Kane, 1996) but they cannot develop it due to a shift to focus on generic CPD (MacBeath & Galton, 2004).</p> <p>Teachers do not have the time or expertise, especially in subject knowledge, to mentor students effectively (Maynard, 1996)</p> <p>Outreach work must be of benefit to the university and to the community through academic expertise encompassing teaching, research and service. (University of Massachusetts, 2008)</p> <p>(There is) a continuing role for the tutor as subject expert. This arises from the fact that primary school teachers are generalist teachers. (Campbell and Kane, 1996)</p> <p>Such an approach involved innovative practice such as ‘just in time’ coaching and</p>	<p>Tutor expertise was highly valued by teachers. It seemed to gain more credibility because it was demonstrated in a real-time classroom context over a sustained period.</p>

	<p>investigations which would be difficult to control, organise, etc. so they resort to demonstrating rather than actually getting children being hands on. I think all those factors impact on teachers' lack of confidence and lack of expertise. That may be one of the reasons why they want you to do science work and also your expertise in the area. It could be that they want to tap into your reputation and your science expertise.' (Head of Dept.)</p> <p>'From the school's point of view we want any expertise that you can offer...' (Teacher, School 3)</p> <p>that is not the same as watching another person bring teaching expertise interacting with children in another way. (Parent governor 1)</p>	<p>personalised learning through 'semantic networking of distributive expertise' (Stephens and Richey, 2011, p. 419).</p>	
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10.5: Pre-service and in-service teacher education (Teacher Professional Development)

This section will discuss outcomes related to the spectrum of Teacher Professional Development. As the development of teachers and student teachers within the context of a local Children's University (CU) session is simultaneous and subject to collaboration, there is some overlap during discussion. This discussion focuses on the core aspect that underpins the unique nature of this local CU and that is the use of teaching student mentors. It was seen above (and later in sections 10.6 and 10.9 with regard to children) that the needs of schools and teachers were met, in the sessions that launched CU involvement, by their acquisition of teacher CPD and raising of children's aspirations for learning. The teacher education students (pre-service teachers) volunteer to participate in this local CU because they like to spend more time in

school but taking part also provides them with opportunities to engage in reflective dialogue with fellow educationalists. They learn in a real-time context and can observe the impact of teaching on children's attitudes to, and attainment in, learning because they engage with them closely as mentors at 'point of delivery'. Student teachers in England do not currently have opportunity to observe pedagogical experts teaching over such a sustained period of time although this may be achieved through the Government's policy to introduce Teaching Schools.

10.5.1: Pre-service teacher education

When students participate as pupil mentors in the local Children's University we have seen earlier (in Section 10.4) that they do so in a less formal setting. They participate on a regular basis and as we have seen in the data in Chapter 6 they recognise the credibility of their university tutor. The students also have freedom to formulate their own perspectives because they participate voluntarily and their performance is not being formally monitored. Bearing in mind the observations of Lortie (see above in Section 9.5.2) it may be that these particular teaching students undergo a mediated entry that is more consistent in quality. The students are able to observe the university tutor and teacher mentor sharing the same learning space and agreeing on appropriate effective pedagogy. This is evidenced in comments from stakeholders:

I like the fact that it is led by experienced educators and is supported by undergraduates because they do have the ability to facilitate and be enthusiastic and design different types of learning experiences. Students under qualified staff supervision. I think use of students is valuable and I would hope that it will just grow. (interested non-ITE Head of Department)

They (the teachers) get the chance to see people with a lot of experience in certain areas of teaching doing their job. They (the tutor) interact with teachers, interact with children in a different way. They (the teachers) get a different fresh perspective on how to teach certain areas and bring children in. (Parent Governor A)

I think the main benefit is the students going into schools and seeing one of their lecturers going into school and teaching. (Widening Participation Manager)

Also when you take students in to see how you teach is another way of teaching them so you are actually showing what your practice is rather than just talking about it in a lecture theatre. So you can bring in real life situations about how you actually sell a subject. (Widening Participation Manager)

In addition to their teaching practice they (the teacher education students) get to go and do innovative things in schools... I think its good for the pupils and the staff by making them think about how they can deliver the curriculum perhaps in a more innovative and exciting way. (interested non-ITE Head of Department)

I think it raises the status of science. It does for me as a subject leader observing the children. (Teacher in School 4)

We had a parent governor in who was really positive about it. He really enjoyed it and said that he wished he'd had that kind of experience himself at school. The science that he'd had was more or less the teacher doing it and you sat watching then go and write it up. So I think he enjoyed it, erm...the other teachers involved enjoyed it and the Teaching Assistants...a couple of TAs that you met on the last session...they really enjoyed it.(Teacher 3 in School 3)

... just talking to you and the students at the time when it was happening there were issues around this way of learning which I think, you know, there were barriers to begin with but as it progressed we saw that these were overcome. (Headteacher in School 2)

This situation is further enhanced by the fact that the teaching students visits into schools are more regular and more varied than the 'normal' course that it supplements. The major difference is that the students are able to form their own judgements on the impact on children's learning of what the data in Chapter 6 suggests is innovative pedagogy. This drip feed situation may also temper the sink or swim situation described by Lortie (see above in Section 9.5.2).

Lortie's research (2002) suggested that the professional teacher education courses carried out on campus were rather sterile and distant from what happened in the classroom. This situation, in Lortie's study, may have prepared students in an individualistic rather than collegial way. Students participating in the local Children's University, in large numbers, were able to reflect on its learning experiences together in real time (as described above). In effect the context was a middle ground or interface between the classroom and the campus.

As we shall see in Section 10.8 (and from data in Chapter 7), the 'credible' university tutor is present and actively teaching in local Children's University sessions and may be viewed as a mediator as the teaching students engage with a variety of teachers:

I think that is one of the most important things. I never saw a lecturer teach a child while I was at college. I think it's about, and I'll use the word expert, seeing someone teaching who is relaxed, calm, not phased by things – I think it is worth ten lectures in a room where you are just learning the theory. (Teacher L)

I think they (the teachers) probably get the expertise of the people running the activities so for example you going into a school, they will learn from what you do, which they can then pass on to other kids. So there is kind of like a snowball effect to it. Also they are working with students. They, everyone learns from everyone else really. Students are learning, the teachers are learning from the students about how to communicate effectively in different ways. (Widening Participation Manager)

So it is more humanised. You are not seeing a lecturer as an academic boffin. I don't feel intimidated by your knowledge, which is degree level, and I know we can speak as equal colleagues. (Teacher L)

The local Children's University is a vehicle for learning in which the teaching student is not being assessed and in which they do not have to conform to the demands of university tutor or mentor. The student is free to listen to discussions between university tutor and teacher that focus on the specific learning activity and to reflect on outcomes accordingly.

Further to this, we have seen (in Chapter 9) that there is no move to install subject specialist teachers in primary schools. This type of role has been undertaken, in the case of qualified teachers, by Local Authority advisers (these posts are currently on the decline) or by Advanced Skills Teachers but their activity is spread very thinly across the sector. Yet we have also seen above that the science expertise of the University tutor was a driver for teachers and schools wanting to take part in this local Children's University.

Indeed, the presence of the university tutor in local Children's University sessions was valued both by the student (in terms of credibility in teaching expertise) and by teachers (in terms of subject knowledge and associated pedagogical knowledge) and this expertise will be discussed in Section 10.8.

The thirst for university tutor expertise in terms of schools' needs is not restricted to a science focus. The headteacher of School 1 stated, on culmination of Children's University activity, that he would:

'welcome back any of your tutor colleagues in maths, geography or whatever.'

Maynard (1996), as observed in Chapter 9, found that teachers lacked confidence in their own subject and pedagogical ability and were nervous about mentoring teacher education students in case they exposed these limitations. This situation was borne out by data in Chapters 6 and 7 arising from discussions with teachers involved in the local Children's University. For instance the teacher in Section 6.3 table 8 stated:

I would like to find more inspiring ways of teaching science. I'm hoping that will encourage them (the Parents) to want to come into school to see exciting ways of teaching the children. Other staff can pop in and watch and it motivates them to become more interested. I think it will meet my needs of teaching science in that I hope I will look at a different way of teaching science and make teaching of science more exciting. I'm looking for some inspiration.

Student teachers drew comparisons between teachers' pedagogy and tutor pedagogy by observing (in section 7.2.1 dealing with pedagogy):

It's probably stuff they could be doing in normal lessons isn't it? That those teachers could be doing themselves but they don't generally (Student Teacher K)

...ideas maybe? Things that they (the teachers) can use themselves in the future. (Student Teacher S)

To give children the opportunity to do something different. Also to share what you know about science with other teachers so they can then teach that way as well rather than what I said earlier about sitting down and writing. I think if you do something they've never thought of it shows them how to teach a hard concept so they can show that to their next class. They can share it with their colleagues. I mean, like, teaching. (Student Teacher K)

In local Children's University sessions the students were able to interact with teachers and university tutor on a more equal footing (as seen in quotes by Teacher L and the Widening Participation Manager above) because the learning experience was less formal and, in a sense, the university tutor and teaching students were providing a service.

Table 21: A comparison of emerged data and substantive literature relating to pre-service teacher education

Key Feature of Theoretical Model	Example of Key Linked Evidence	Agreement found in Literature	Novel aspects apparent (with elements diverging from literature)
Pre-service Teacher Education	<p>I think you are doing a fabulous job for the teacher training students because I think that they can get enhanced employability skills.</p> <p>...things which then they can discuss in an interview process. From an employability perspective it's key.</p> <p>I think that it impacts on the employability of our graduates.' (above quotes from the interested non-ITE Head of Dept.)</p> <p>'I think they probably get the expertise of the people running the activities so for example you going</p>	<p>This is characterised by 'theory' sessions in University allied with formal, practical placements in schools under the mentorship of teachers. Lortie (2002, p. 59) calls the Student Teacher's entry to the profession a 'mediated entry' and not uniform in quality compared with other professions.</p> <p>Lortie's research (2002) suggested that the professional teacher education courses were decontextualized.</p> <p>Fully qualified teacher mentors were reluctant to convey subject and pedagogical knowledge to students because of</p>	<p>There are signs that opportunities for student teachers to observe science practice are random and infrequent. This initiative gives them the chance to witness the pedagogy of a leading practitioner in context. This situation is far from common.</p> <p>The situation with these local CU sessions does provide learning on</p>

	<p>into a school, they will learn from what you do, which they can then pass on to other kids. So there is kind of like a snowball effect to it. Also they are working with students. They, everyone learns from everyone else really. Students are learning, the teachers are learning from the students about how to communicate effectively in different ways.' (Widening Participation Manager)</p> <p>It gives you credibility [the tutor]. It's good to see you teach children.' (Teaching Student, School 1)</p>	<p>gaps in their own knowledge. These teachers did not have the time or the expertise. Maynard, (1996). Campbell and Kane (1996) identified a continuing role for the tutor as subject expert and felt that not every teacher makes a good teacher educator.</p> <p>Darling-Hammond (1990) suggested having professional schools where newly qualified teachers work with teacher experts and university tutors.</p>	<p>several levels. It is similar to what Darling-Hammond suggested and to what is developing currently with the Teaching School movement.</p> <p>The key difference here is that the University tutor, as subject expert and having credible practical teaching expertise, is presenting development in these areas to both teachers and teacher education students for the benefit of participating children.</p>
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Overall, it seems that the activities within this local Children's University are providing a vehicle for delivery of subject and pedagogical expertise by a specialist university tutor. This is of benefit to the children, teaching students and qualified teachers.

Table 21, above, highlights the teaching and learning context that is astutely described by the Widening Participation Manager as providing opportunity for learning by all stakeholders involved namely children, teachers, teacher education students and tutor. The situation is similar to that described by Darling-Hammond, as long ago as 1990, and the current situation in proposed Teaching Schools. The major difference, in the case of a local CU context, is that the University tutor and not a specified teacher expert provided the expertise.

Table 22 below builds on this notion of professional development but this time from the perspective of more experienced teachers in service. As has been seen, stakeholders highlighted the dearth of professional development available to teachers or their lack of awareness of available courses. There is further suggestion, to Darling-Hammond's work, that professional schools may provide a context for such CPD as seen in the work of Sparks and Hirsch (1997) and

Cordingley (2003). The main difference provided by the local CU context is that the University tutor is the subject expert responding to teachers' requests for subject-based CPD rather than the generic provision imposed on them by schools or Local Authorities. The informal nature of the local CU context helps to instil a sense of mutual trust.

10.5.1.1: The induction of Newly Qualified Teachers

One benefit of introducing this local Children's University initiative was that students might benefit from additional time in schools. Indeed as they are placed in schools for blocks of several weeks only on an annual basis the students may lose their desire or motivation to become teachers because of lack of practical experience. The student teachers come to University hungry for practical teaching experience and professional engagement with children. The student teachers participation in the local Children's University satisfies this hunger because they value the additional experience. This may have a bearing on student retention and softens the impact that transition may have (see above in Section 10.5.1) on shaping their professional identity.

The local Children's University situation is one that addresses the notion of school-based in-service provision whilst informally interacting with teaching colleagues although the emphasis is usually on less formal, almost incidental acquisition of subject content and pedagogical knowledge because it is dictated by activities negotiated by the tutor and the teacher. This resembles the thoughts of Harwell (2003) as discussed in Chapter 9 that suggests the need for teacher collaboration in relation to their CPD should have a positive impact on the children being taught.

In one sense it highlights the 'agency' aspect of professional identity postulated in Section 9.5.2 by Coldron and Smith (1999). The beginning teacher may have expectations that they may be supported in the planning of their own professional development and in identifying appropriate training opportunities that will further those plans or aims. The extent to which this will be achieved may depend on the 'structural' aspect of professional identity, outlined in Section 9.5.2, in that management, acting on behalf of the school or community of practice, may restrict those opportunities or dictate other instances that are

more tailored to the needs of the school rather than the individual. Teachers observed this earlier, in Chapter 7:

At the moment it is tailored to the schools needs. If we have a particular focus such as literacy then the school will identify courses. But it is mainly focused on the school development. If we want to go on a course we are asked how relevant it is to the school, what we can bring back. That's the same for class teachers. I think once you move into management and what you want in your career it is better. I think if you show that you want to progress career-wise they take your needs into consideration as well.(Teacher J)

I think some schools impose development based on school's needs. My school supports the individual. (Teacher M)

At the other end of the spectrum we have the situation suggested by Darling-Hammond (1990) who suggests that the key to inducting teachers successfully is to execute this in professional development schools where expert teachers work with university tutors to formulate learning experiences for these newly qualified teachers. As we saw in the sections above, including Section 10.4 dealing with Pedagogy, this situation prevails in local Children's University sessions except that, in this latter case it may be the University tutor who is the 'expert'.

The professional schools discussed in Darling-Hammond's study resemble the 'teaching schools' postulated by the current (2012) coalition government in England and Wales. In relation to a learning situation encountered in the local Children's University it may be said that hierarchy in terms of expertise is 'flat' but depends on the subject expertise of the respective professionals, the teachers, the tutor and to some extent the teaching students themselves.

The presence of the university tutor may also serve to minimise the effect of tensions resulting from hierarchical relationships and differing perceptions of professional identity, as described in the quote by Teacher L:

So it is more humanised. You are not seeing a lecturer as an academic boffin. I don't feel intimidated by your knowledge, which is degree level, and I know we can speak as equal colleagues.

10.5.2: In-service CPD – the professional development of more experienced teachers

It may be that schools participating in this local Children's University have stumbled on a solution in that a specialist provider is 'taking their science CPD to them'.

These suggested modes of CPD suggest that such activity is encountered informally whether that is online at a time and in a place to suit the learner, through networking at organized events or in the workplace or a place that replicates the workplace. The latter instances resemble the learning situations encountered by teachers observing activities delivered to their classes through this local Children's University. The notion of informal CPD has been explored in Section 10.3 above and was discussed in Section 9.5.4.2.

Perhaps this is a reason why teachers are attracted to participation in this local Children's University because one aspect is that the CPD potentially comes to their classroom as apparent in quotes above by various stakeholders.

We have seen in Chapter 9 that Timperley (2011) suggests that CPD should become core schools business in that it is part of a pattern of ongoing practice. It can be argued that this takes place as an aspect of this local Children's University), and that it impacts on teaching and to assessment in order to improve student learning. Furthermore, Timperley (2011) asserts that the learning environment should recognize the fact that such learning is cumulative - it takes time. The Headteacher in School 2 referred to the need for investing time in this development of practice:

... just talking to you and the students at the time when it was happening there were issues around this way of learning which I think, you know, there were barriers to begin with but as it progressed we saw that these were overcome

Section 9.5.4.3 discussed the notion of collaborative professional development practice as Joint Practice Development. It is worth revisiting, in particular, the work of Rueda (1998) which identifies assisted performance by more competent others. Of course there is a difference here to the type of collaboration between teacher and 'expert' tutor working within the classroom of the former. In this case, under the auspices of this local Children's University, the teacher observes and reflects on the practice and usually comments positively (as seen in comments within Section 10.4 above) in regard to its benefits, but the teacher's learning intentions are not planned. The learning is directed at the children and the teacher gleans non-specified benefits.

In Section 9.5.4.3 Teaching Schools were discussed as a consequence of work carried out by Hargreaves (2011). He stressed the need for these 'outstanding' Teaching Schools to ensure transfer of good practice as a consequence of

simply sharing good practice.

To some extent this is encountered by student teachers and qualified teachers within the classroom settings of some of this local Children’s University activity. These stakeholders have made reference to inspirational tutor pedagogy and the expertise of the latter is discussed later in Section 10.8. It would require teachers to have time to work in this way over a sustained period (as evidenced by comment above from the Headteacher in School 2). At this point it is worth recalling the recommendations of Harwell (2003) who cited the work of Sparks and Hirsch (1997). They advocated collaborative teacher development within learning schools where staff study what they teach and how they teach it. Again, this can be likened to the situation in some aspects of this local Children’s University as evidenced by stakeholder comment in the above sections.

Table 22: A comparison of emerged data and substantive literature relating to in-service teacher education

Key Feature of Theoretical Model	Example of Key Linked Evidence	Agreement found in Literature	Novel aspects apparent (with elements diverging from literature)
In-service Teacher Education	<p>‘I think it’s because, all the time I’ve been in school, I don’t think anyone has been on a science training course. It’s just reading and writing. So maybe they haven’t had one in such a long time so the new things that we are now taught of how to do it, they weren’t taught like that when they were trained to be teachers. They haven’t been shown since how to do different things.’ (Student K)</p> <p>‘They [the teachers] get the chance to see people with a lot of experience in certain areas of teaching doing their job. They</p>	<p>There is an increasing focus on generic CPD at the expense of science-specific CPD (Everett, MacLeod & Thurgood, 2013)</p> <p>Cordingley et al (2003, p. 1) review Collaborative CPD and define it as ‘teachers working with at least one other related professional on a sustained basis’. This aligns with the local CU situation.</p>	<p>Teachers value (see also Table 20 above) opportunities to observe leading practitioners in their classroom teaching their children. This is not common in terms of their science CPD. It is less formal CPD and outcomes can be discussed <i>in situ</i> and face-to-face. See ideas of Sparks and Hirsch (1997) who advocate that collaborative teacher development take place in learning schools where staff study what they teach and how they teach it. It seems to be an extension of Cordingley’s 2003 study because in the local CU the expert does some teaching.</p>

	<p>interact with teachers, interact with children in a different way. They get a different fresh perspective on how to teach certain areas and bring children in. How to enthuse, how to facilitate and how to reward children at the end.' (Parent Governor)</p>		<p>There are also opportunities to discuss issues with other practitioners at various career stages, and with the CPD provider, at the point of delivery.</p> <p>Teachers in the local CU request subject-centred rather than generic CPD (Everett, MacLeod & Thurgood, 2013)</p> <p>There is divergence from the literature in that this CPD is sustained over a considerable period of time, it is personalised with real-time teaching of children.</p>
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Similarly, we saw earlier in Chapter 9 that the work of Cordingley et al (2003) considered how teachers sustained joint collaboration allowed teachers a greater confidence in seeking enhancement of knowledge and practice. Cordingley et al (2003) identified a range of features related to such CPD. One of the most interesting features of Cordingley's (2003) findings, in relation to the research of local Children's University formation, is the use of external expertise related to school-based study with reflection involving Higher Education Institution support.

Table 22 provides an overview of findings relating to In-Service teacher CPD. This feature is a consequence of sustained interaction with the tutor during local CU sessions.

10.5.2.1: Extended observation of tutor in real-time context

A further novel aspect of this study is the student teachers' opportunity to observe their tutor teach children and interact with teachers over an extended period of time.

Teacher Education students stated that they valued seeing their tutor teaching children (see quotes above). Some students stated that it made the tutor more

credible in their eyes (see quotes above). They had been subjected to lectures, seminars and workshops at University during which the tutor had given them an insight into aspects of subject knowledge and effective pedagogical approaches. The importance of these areas had been reinforced with reference to underpinning theory. It seemed, from the response of students having witnessed the tutor practise in a classroom context, that the claims made by the tutor regarding educational theory were justified or proved. Links between theory and practice were evident.

The students' observations of the tutor's practice could be made over an extended period of time. Students could reflect on input and output, on cause and effect, and discuss issues with the tutor and observing class teacher immediately in the midst of the classroom context.

Students were able to observe the professional interaction and dialogue between tutor and class teachers. The students were a party to these informal, non-hierarchical discussions and the potential for learning from a given activity or context was maximised.

10.5.2.2: Real-time contextualised CPD for teachers with time for discussion with other professionals.

As has been observed above, activities carried out under the auspices of this local Children's University have allowed for learning to take place at different levels and have also strengthened the university-school Partnership in terms of moderation of student performance and deepening schools' understanding of university expectations. In addition, it was found that such learning situations provided a context through which university tutors could use their expertise to help to develop teachers' practice.

This, as has been demonstrated earlier, arose from unprompted requests from the teachers and schools themselves. On the whole, it was teachers who dictated the initial selection of subject areas as a focus for children's learning. This, in turn, often arose as a result of teachers' lack of expertise in that area, usually science.

Consequently there arose opportunities for extended collaborative Continuing Professional Development for teachers. This CPD was learner-centred in terms

of focus and it addressed subject content and pedagogical content knowledge. It also occurred at the 'point of delivery'. This provided opportunity for discussion on strengths and weaknesses while they were in the minds of the tutor and those observing. It was a real context and even allowed participants to observe and question the children in the lesson. The informal situation allowed for open and honest discussion regarding practice. It overcame the drawbacks that may be encountered with other modes of CPD as described in the literature in Chapter 9. These include teachers' sceptical attitudes to some experts (discussed later in Section 10.8), to the experts' 'out of context' delivery, to course recipients' inability to relate material to peers effectively or to a narrow focus on generic rather than subject-based issues.

There is evidence that this 'live' CPD in context inspires teachers (see data in Chapters 6 and 7 and discussion above in Section 10.4) and matches their needs more closely, possibly as a result of the fact that it has been requested by them and that they are able to further personalise it through their own questions in 'real time'. As a result they may be more likely to adopt it in their own practice (achieving the challenge for Teaching Schools set by Hargreaves (2011) requiring them to strive for practice transfer) and there has been evidence of this during the course of this study. There have been instances of requests for further input, for example via email communications that contain comment such as 'the staff still raves about your session' or impromptu comment such as 'when are you coming in to teach my class again, I need inspiration' upon meeting a teacher in a school corridor.

The professional development of teachers and student teachers was not the only learning that was taking place in a session of this local CU. The children's learning was also of paramount importance and is discussed in the following section.

10.6: Children's learning.

The impact on children's learning and the manner in which this was achieved has been discussed above in relation to adopted pedagogy and informal learning contexts. Table 23 provides a summary of aspects relating to the learning achieved by children in a session at this local CU. Stakeholders, in

addition, placed emphasis on the learning environment and resources used. These features are discussed below.

Table 23: A comparison of emerged data and substantive literature relating to children's learning

Key Feature of Theoretical Model	Example of Key Linked Evidence	Agreement found in Literature	Novel aspects apparent (with elements diverging from literature)
Children's Learning	<p>'When are you coming into schools again to work with my class? I need inspiration.' (Teacher from School 4 who had not had contact with the tutor for a year or two)</p> <p>'Fun, exciting, really interesting...'</p> <p>'There was going to be lots more things to do.'</p> <p>'Erm, because when we, like, do it here on the big whiteboard we like do all games about science and we like make stuff in there and try and discover what it is supposed to be like...'</p> <p>'It was different but interesting at the same time.' (Children from School 3)</p>	<p>Learning in schools is characterised by formal teaching to objectives as set out in the National Curriculum (1988). Learning within a local Children's University is less formal, extracurricular and voluntary on the part of the learner. It can take place inside and outside the classroom. With this in mind MacBeath (2013, p. 4) noted that: 'teachers need to be informed and alert to children's renewed self-confidence and their history of experience beyond the national curriculum'.</p>	<p>Children's learning within tutor-led local CU sessions is also less formal and is based on child-centred, enquiry based or discovery learning. Although focused on NC learning objectives there is freedom to explore children's thinking beyond these due to the confidence and expertise of the tutor. (see discussion around Raths' paper). These approaches are hopefully inspiring teachers to consider modifying their practice.</p>

Table 23 above gives a flavour of the impact of participation in this local CU on children from both the teachers' and the children's perspectives. The informal pedagogy adopted by the tutor appealed to both teachers and children as evidenced in this table. In the case of the teachers it provided opportunity for CPD as will be discussed later in more detail. In relation to the children, the learning experiences offered enjoyment, variety, child-centredness and more opportunities to share their enthusiastic engagement with the learning process

through discussion with teacher education student mentors. The children enjoyed learning outside of their classroom even if it was in another space within the building. The experience, as seen above, raised aspirations and fostered a love of learning purely for learning's sake. The children seem to suggest that the learning is more fun and has more pace, variety and scientific purpose.

This concludes a focus on both the key categories in this study and on the core elements of the complex system. There are other features that are important and that also have a bearing on those key categories. These are discussed below.

10.7: Strengthening Partnership through common practice.

The teacher education students learned together during local CU sessions by focusing on specific contexts rather than being allocated to different schools. As a consequence of going into different schools they probably underwent different experiences and learned different things. Ultimately, of course, the exposure to different situations in different schools should be a positive outcome in terms of broadening the students' experience and their ability to eventually perform effectively in different contexts when they are in post.

It was useful for students to witness specific instances in practice and to be able to contribute to broad discussion straight away. This arrangement ensured consistency in terms of the students' exposure to theory and practice.

The situation also provided a working example of opportunity for tutor and classroom practitioner to moderate the expectations of the university-school partnership. Students are allocated to a range of schools within the Partnership in order to gain practical experience. They are mentored during this time largely by classroom teachers and this situation can be variable for a variety of reasons such as teacher-student relationships, teacher ability, teacher expertise in mentoring, time constraints or acceptable levels of students' practical performance. It was this latter reason that proved beneficial in local Children's University learning activities because tutors, teachers and, indeed, teaching students could agree on expectations. In short, there was informal appreciation of university-school perspectives.

10.8 The learning environment and resources used

Stakeholders in the local Children's University placed value on the 'place' or environment for learning and also on the resources used by the person delivering learning sessions:

...because we were put into a different room, a different environment, we had the chance to create a different atmosphere. (Student Teacher in School 1)

I think it was quite a good place to take it...Because there was more room, you could do more than one activity in it. Like in the classroom you could only do like two activities or one... (Child in School 3)

I think it teaches them as well to alter their behaviour because of the different setting. (Teacher in School 4)

It's in a different environment as well, not just the classroom. (Student K)

Nocon and Cole (2006) argue that the limitless informal educational opportunities offered by organized adult-led after-school activity is the necessary complement to the formal, limited provision offered during the school day. These thoughts echo the ethos of the Children's University initiative.

Resources have also been identified by stakeholders as being important in the context of a local Children's University. The principal stakeholders offering comment in this regard are teachers. It would seem that the resources in question are the human resource, in the form of University undergraduates and tutors, and the physical apparatus and materials introduced to the setting as part of the learning activity:

Students provide a different role model for our children. (Teacher 1 in School 1)

...I really liked was that you brought students with you. The students worked with groups and they were much more...down to their level than possibly a teacher would be. It would be much more formal. (Teacher 2 in School 2)

...I think having that guidance and having people just to point them in the right direction and somebody to talk to made a difference... (Teacher 3 in School 3)

I mean university students. Because they are at the forefront of actually learning about primary school teaching now, so anything they bring into the classroom, the teachers who have been in for five or six years are going to learn from them and take away something as well (Widening Participation Manager)

I thought that when you came in it was absolutely excellent from the point of view of the pedagogy there. I think as well that the practical nature of what you do and the resources that you bring in are of real benefit to the children. (Teacher M)

10.9: Raising of children's aspirations

Section 9.7 explored the notion of aspiration in relation to its meaning for a variety of stakeholders including parents and the community. The outcomes of

this current study of the formation of this local Children's University are generally in keeping with MacBeath's findings.

The annual evaluations of local Children's University activity, carried out on behalf of the Children's University Trust by John MacBeath (2010, 2011, 2012, 2013), highlight many positive outcomes (see Chapter 9) and one of these is the raising of children's aspirations. This feature also emerged during the course of study into this local Children's University. Stakeholders involved in the formation of this local Children's University offered their thoughts on how the aspirations of participating children has been affected.

Graduations form a high point in the life of a local Children's University (MacBeath, 2013) but it is not clear whether children see these as the main reason for participation or whether that it is the act of taking part in learning experiences. In other words there is not a clear gauging of process against product or extrinsic outcome.

Stakeholders gave an insight into their perceptions of this feature:

...even though it's really early on in their education it's still a good chance to think about the future...the kids would ask me questions about university and find them quite interesting so that's one of the aims as well to make them aware of what you can do when you are older...it encourages the lower ability half as well and makes them see it is not impossible. (Teaching Student involved in School 1)

...it gives them the opportunity to work with adults that they view as trusted adults, erm, so they just get the chance to develop their social skills, their self-confidence, self esteem and aspiration really. (Headteacher of School 2)

...but I think it will suit the children at this school because some of them are lacking in motivation...I'm hoping that this will help them realise that learning can be fun, and it isn't about doing something because they have to but it's something they want to and they want to learn (Teacher in School 3)

I think it might also encourage them to specialise in science later. I think with the children it raises their self-esteem. (Teacher in School 4)

The work you are doing with primary school children, you don't do secondary at the moment do you, is having a real knock-one effect in terms of raising aspirations. (interested non-ITE Head of Department)

A new way of looking at things. Enthusiasm. They enjoy it and I think it is one way of meeting a lot of different levels of need. The gifted and talented children are going to thrive on it and think this is what I'm going to be. This is what I can aspire to. (Interview with Parent Governor A)

I think it's the process is why they take part but then as it gets nearer to the end , when they graduate they realise they've done a really special thing, because they come here (campus) and they have it given to them in a very special way. That makes what they have done a big thing. Whether that makes it that they set out knowing what a graduation is they realise by the end that that is what they are aiming to do in the next ten years when they go to another graduation. If that gives

them the incentive to go on and make sure that they get a degree and make sure that they have a thirst to go on and make sure that they earn what they deserve in life then I think it is a good thing. At the beginning of year six they might not know what a degree is but by the end of it they realise it is a very special thing that they have achieved. (Parent Governor L)

There are indications in the quotes above that the concept of aspiration is influenced by other factors such as motivation, enthusiasm and self-esteem. It is also apparent that the raising of children's aspiration is a consequence of their engagement with the learning activities. This is evident in the comment from Parent Governor L whose analysis of the situation indicates that it is, indeed, the process of learning rather than the reward of Graduation that is the initial driver. The Graduation itself is seen as a celebration of children's past efforts.

There were some differences identified in this current study that related particularly to raising of parental aspiration. Teacher 1 in School 1 felt that parents in the school's catchment area were happy with the 'status quo'. There perceptions of aspiration were a sense of success if they could maintain the heritage or tradition of their forefathers:

...a lot of the children's expectations are fairly low I would say so they are quite happy with... they want to stay in the area. No, the expectations aren't low. They think they will have achieved if they stay in the area. They bring their families up in the area, that's what they want, that's where they see themselves. So a lot of them historically are going to continue to go on fishing boats or work in a factory where mum worked. They want to stay in the area, family life is big to them. They want to stay with the extended family in the area. That's the type of family we get from the council estates if you like. Perhaps the aspirations are different from the private housing but there still tend to be families who have just moved up a level and they still want to stay in the area. But then (this area) is a lovely place for anyone to want to live so obviously they want to live, they want to stay in the area as well.

Further to this, Teacher 1 felt that it was a part of the school's ethos to address the raising of aspiration:

We try to make it obviously a happy, lively school and meet the needs of our children because we see the needs of our children as being quite specific in terms of raising their expectations, raising their aspirations, trying to give them lots of widening experiences

Parent Governor L expressed the feelings of several parents related to the aspirations of their children with reference to potential Higher Education involvement:

Going to University isn't the be all and end all and I say that to my children. For some that may not be their line in life. They might go into industry but be inspired later. As long as we inspire them to get the best they can achieve then I don't think it has to have a University degree at the end of it. I'm all for professional degrees

and work-based learning. I want them to be contented in life. I want them to reach their potential.

It appears that the raising of aspiration is related to success in the learning journey rather than any extrinsic reward. The latter seems to be of secondary importance.

Table 24 below indicates that findings such as aspiration have already been established through previous research and evaluation. MacBeath's (2008 to 2013) annual evaluations for the National Children's University, for instance, contain many references to the raising of children's aspirations.

This aspect was found throughout this study of the local Children's University. It was voiced by the children themselves, and also by teachers and parents when observing the impact of local Children's University participation on those children. Conversely, more than one adult stakeholder in this local Children's University stated that some families had few aspirations and that some parents simply wanted their children to be happy in life irrespective of thoughts relating to successful participation in higher education:

Going to University isn't the be all and end all and I say that to my children. For some that may not be their line in life. They might go into industry but be inspired later. As long as we inspire them to get the best they can achieve then I don't think it has to have a University degree at the end of it. I'm all for professional degrees and work-based learning. I want them to be contented in life. I want them to reach their potential. (Parent Governor L)

Table 24: A Comparison of Emerged Data and Substantive Literature relating to 'Aspirations'

Key Feature of Theoretical Model	Example of Key Linked Evidence	Agreement found in Literature	Novel aspects apparent (with elements diverging from literature)
Aspirations	'...it gives them the opportunity to work with adults that they view as trusted adults, erm, so they just get the chance to develop their social skills, their self-confidence, self esteem and aspiration really.' (Headteacher, School 2) 'I think it might also encourage them to specialise in science later.' (Teacher,	Raising children's aspirations was one of the key findings by MacBeath (2008; 2010)	The raising of aspirations was achieved alongside sustained, contextualised science-specific Professional Development for teachers and student teachers.

	<p>School 4)</p> <p>'A new way of looking at things. Enthusiasm. They enjoy it and I think it is one way of meeting a lot of different levels of need. The gifted and talented children are going to thrive on it and think this is what I'm going to be. This is what I can aspire to.' (Parent Governor)</p> <p>'The work you are doing with primary school children, you don't do secondary at the moment do you, is having a real knock-one effect in terms of raising aspirations.' (Head of Dept.)</p>		
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If raising aspiration is a key indicator of positive impact then raising adult aspiration, in parents and other stakeholders, may be a more effective target although one way to achieve this may be through demonstrating the impact on participating children.

10.9.1: Raising of community aspirations

Further to the above, in examining Table 21 below and taking into consideration Table 9 in Chapter 8, there were other categories that were considered important to this study of a local Children's University. These include the place of the school and the university within the local community and the mutual benefits that can be derived from such partnership working. These benefits have been alluded to earlier in this thesis (see data in Chapter 6 in particular) and include issues relating to the Widening Participation Agenda from the university perspective. Schools and the community benefit from 'community cohesion' in terms of producing contented, competent citizens that help to maintain the values and the economy of the community. Schools may also use the community as a resource for learning. An overview of aspects relating to 'community' is presented in Table 25 below.

Table 25: A comparison of emerged data and substantive literature relating to ‘Community’

Key Feature of Theoretical Model	Example of Key Linked Evidence	Agreement found in Literature	Novel aspects apparent (with elements diverging from literature)
Community	<p>I think it is important to make contact with other establishments, as a school, to develop our own needs. (Teacher – School 4)</p> <p>Well I’m hoping that we can involve some of the community members, invite some of the governors who are members of the community to become involved in the science days and invite some of our parents because we are trying to make closer links with parents. (Teacher 3)</p> <p>(Make) another link with another area of the community. (Teacher 1)</p>	Aspects relating to community and community cohesion were evident in findings by MacBeath (2012) in an Evaluation Report to the CU Trust	Community cohesion was achieved alongside sustained, contextualised science-specific Professional Development for teachers and student teachers.

10.10: Resonance with literature – revisiting the theoretical Model

Chapter 8 introduced aspects of note by developing a theoretical model. Having achieved this there was subsequent engagement with literature and this was presented in Chapter 9. This provided further insight that confirmed some of the emerged findings and also allowed for identification of novel ideas.

The initial theoretical model postulated with reference to Figure 9 was revisited and a series of tables (see Tables 18-25 above) were constructed. These brought together aspects arising from both data and substantive literature. It is reassuring that features of emerged findings are corroborated but more so that aspects diverging from literature arise for consideration.

These issues, although important, have been considered elsewhere (MacBeath, 2008-2013). This researcher wanted, bearing in mind the scope of the study, to focus largely on emerged features that were of particular relevance to teacher

professional development. This resulted in the generation of the main theory described in Chapter 8 and culminated in a focus on aspects relating to the teaching and learning of various stakeholders. These stakeholders are principally teacher education students and practising teachers and a central feature amounts to reflection on provision for their professional development in terms of science specific expertise.

This may include both pedagogical and subject content knowledge aspects but principally, according to data, the former. In turn these factors impact on the education of children. This may relate to their learning within the local Children's University in the short term but be of greater importance during their learning journeys that extend well beyond this.

Having reflected on the key categories, as highlighted in the initial theoretical model described in Chapter 8, in tandem with a consideration of the substantive literature, that model was expanded in order to provide more detail and is presented in Figure 12 below (note that this has prevented pictorial representation of the context as Complex Adaptive System).

10.10.1: The Theoretical Model revisited

The expanded theoretical model shown in Figure 12 is considered in the light of its value to the body of research relating to the spectrum of teachers' professional development, in particular, from that met during initial teacher education to provision aimed at experienced practitioners. The following section discusses other valuable outcomes of this study that set out to identify the needs of stakeholders during the formation of this local Children's University. Figure 12 portrays the learning of each of the stakeholders participating in a local CU session.

With regard to the children, that learning may be embodied by aspects of curricular, relating to the English National Curriculum (1988), extracurricular (incorporating some linked 'out of classroom' learning) and hidden curricular (relating to aspects such as incidental acquisition of life skills). Investigation of Figure 12 shows that the learning is fun, active and child-centred. It is also aspirational and incorporates a blend of specific and non-specific learning intentions that are achieved using a non-formal pedagogy. Learning is set in real world, real time contexts.

The learning experienced by the other stakeholders in the local CU sessions amounted to practitioner professional development. There are similarities to the above in that this professional development is non-formal, learner centred or personalised and encompasses a mixture of specific and non-specific learning intentions with a heavy emphasis on the latter. The context for learning is 'real time' meaning that the children are central to the process. The children are recipients of curricular learning achieved, for instance, through the tutor's pedagogical content knowledge but outcomes of this are opportunities for the teachers, the student teachers and the tutor to identify aspects of practice that are relevant or significant to them. For the teachers, in particular, this contextualised learning occurs over a sustained period allowing for synergistic reflection and professional development. This exhibits divergence from the literature.

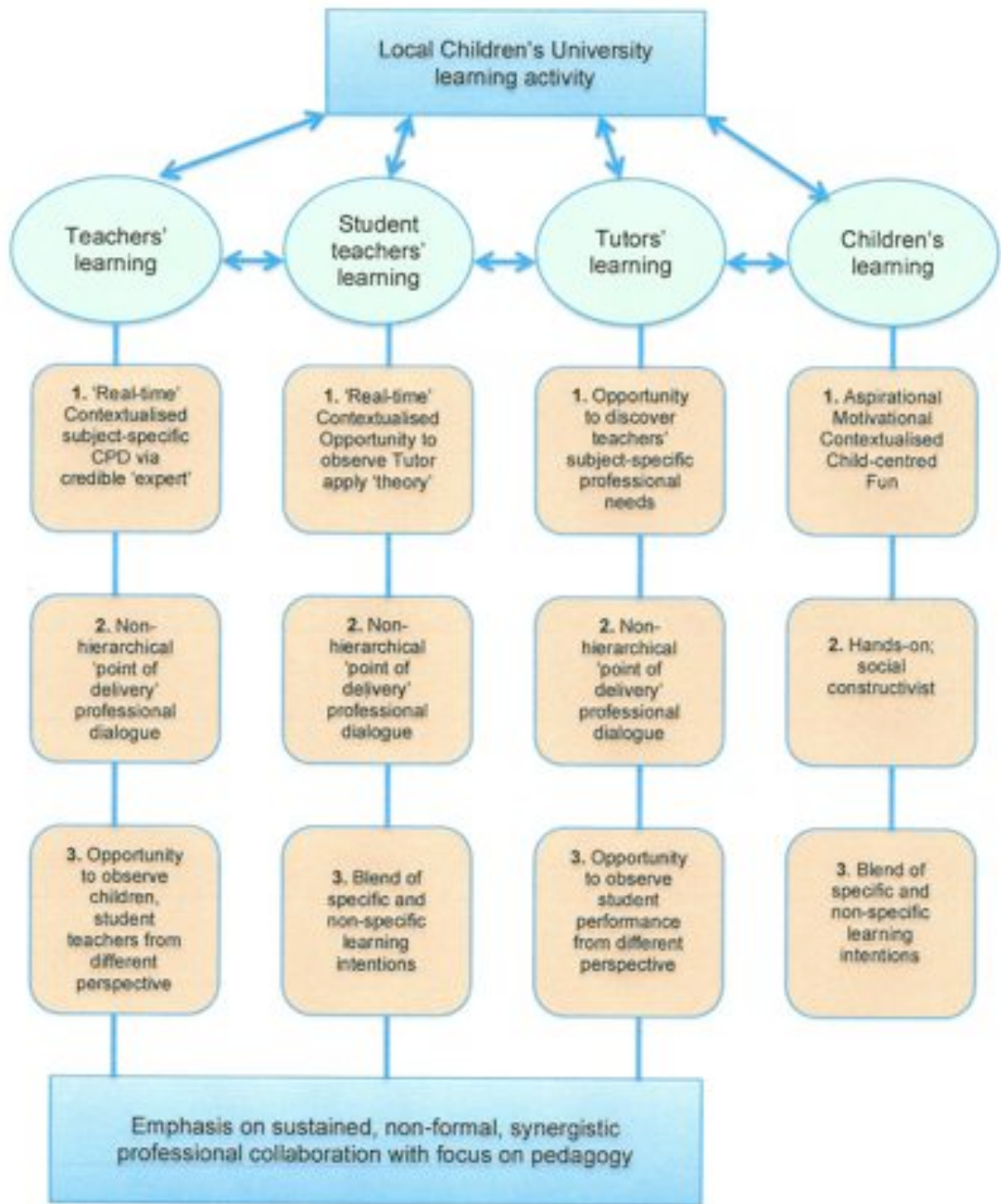


Figure 12: Expanded Theoretical Model

The situation also affords opportunity for non-hierarchical, 'point of delivery' dialogue between practitioners. This is based on trust and a perceived credibility of the tutor as 'expert'. There is divergence from literature in terms of accustomed CPD practice. The latter is often set out of context. It does not involve children as learners. Thus it does not offer the opportunity for teachers and student teachers to observe the 'cause and effect' of tutor pedagogy that is possible in a local CU context. Furthermore, the teacher CPD offered on 'courses' is delivered by a provider who is not generally well known to the teachers. Consequently the provider does not have the benefit of developed credibility or trust in working towards pre-specified learning intentions that are often generic or school-specific rather than teacher-centred or subject-based.

10.11: Summary

This chapter has provided discussion relating to reconsideration of the theoretical model following a review of substantive literature. It identified some novel features relating particularly to the learning of children and the professional development of teachers. The latter may be of more interest as it impacts on the former. These novel features, in turn, inform aspects of originality present within the study.

These original aspects and other outcomes will be considered in the following chapter.

Chapter 11: Conclusions

11.1: Introduction

The previous chapter consolidated a central theory with subsequent discussion related to successful professional development of teachers that had a positive impact on the learning of children. This theory was rooted in the non-formal learning undertaken by practitioners in the real-time context of learning experiences within a 'unique' local Children's University. This leads to an issue that is of central concern to the researcher and that is the originality of the study and associated features. Consequently, there is a section devoted to originality in terms of potential value that the study brings to the field of knowledge. This latter point necessitates an evaluation of quality of the research related to its rigour and associated trustworthiness. Further to this there is the need to recognise the limitations of the study.

Finally there is discussion based on how the study may be developed to inform future research.

11.1.1: Defining the notion of Conclusion

It is indicated above that this chapter aims to deal with the construction of a conclusion to this research study. Boyle (1665, p. 70) stated:

[We] begin to be weary of writing...

[we] think it high time to hasten to a conclusion.

This quote warns of the danger of paying too little heed to the conclusion of a report, paper or thesis and yet as Beach, Becker and Kennedy (2011) found in their extensive review of research handbooks and websites, there is very little in-depth support or guidance available to researchers. Beach, Becker and Kennedy (ibid. p. 285) found that most sources agreed that conclusions should:

- Summarise results
- Discuss the implications of findings
- Discuss the limitations of the research
- Provide suggestions for future research

It is important to distinguish between the findings and the interpretations of those findings (ibid.) The former are essentially the results of the study whereas

the latter are the inferences drawn from these that result in explanation or extension of the findings. This observation is echoed by Wiersma (2000).

The Publications Committee of the American Psychological Association (APA Publications and Communications Board on Journal Article Reporting Standards, 2008) working under the acronym JARS deal with conclusions under a section of their article called 'Discussion'. They recommend including:

- A statement of support and non-support of hypotheses
- Similarities and differences between results and existing literature
- Interpretation of results
- Generalizability of findings
- Implications for future research

Beach et al. (2011) state that the literature does not provide enough guidance on how to formulate conclusions in order that they provide more than a reiteration of findings. Beach et al. (ibid.) discuss conclusions in terms of reasoning from evidence, applying prior knowledge and generalising.

In relation to the first of these areas, it is clear that reasoning can result in the introduction of unwelcome effects such as bias that are apparently 'hidden'. This researcher has maintained transparency in this regard and the awareness of positionality or prior experience has been taken into account. This avoids or at least limits the clouding of any intended logical inferential reasoning. Beach et al. (ibid. p. 286) discovered that researchers had a tendency to isolate information in results that confirm (based on prior knowledge) rather than challenge ideas. They call this the 'belief bias effect'.

The second feature relating to drawing conclusions concerned, more specifically, the researchers' prior experience in terms of their knowledge, beliefs and values. A key outcome of this is the possibility that the researcher may unintentionally try to discover features in the data that confirm their views. One of the benefits of adopting Grounded Theory Methodology in the case of the current very open study is that, in having an open mind, there were no hypotheses because there was no way of knowing what stakeholder needs or potential outcomes there might conceivably be prior to the study. Nevertheless an awareness of researcher positionality only served to diminish this.

Furthermore 'motive-driven cognition' (Beard et al., 2011, p. 287) is avoided partly for the same reason but also because the pursuit of theoretical saturation was meticulous rather than 'jumping to conclusions'. What needs to be done is to reconcile prior ideas with the newly discovered knowledge such that the former serve to challenge outcomes (ibid.). In that sense the prior experiences are a tool to develop knowledge within a conclusion and are not suppressed.

Finally the conclusion of this study incorporates analytic generalisation where outcomes may be used as a guide to inform new situations or contexts.

11.2: Aspects of originality and of potential value to the field

At the outset it is perhaps worth considering what original research actually is. This researcher considers that original research is concerned with making new knowledge and with the presentation of that knowledge in such a way that it is not simply a reiteration of previous findings. At a very basic level this may be embodied by findings relating to particular participants at a particular location and at a specific time. The result might be that such study may have very limited value because it cannot be applied to, or have relevance in, other areas. There are initial indications that this latter point is not the case for this particular study.

Further to this Phillips and Pugh (2000, p. 63) identified nine ways in which a piece of research may be deemed to be original. These are:

1. Carrying out empirical work that has not been done before.
2. Making a synthesis that hasn't been made before.
3. Using already known material but with a new interpretation.
4. Trying out something in this country that has previously only been done in other countries.
5. Taking a particular technique and applying it in a new area.
6. Bringing new evidence to bear on an old issue.
7. Being cross-disciplinary and using different methodologies.
8. Looking at areas that people in the discipline haven't looked at before.
9. Adding to knowledge in a way that hasn't been done before.

It was claimed, in the Introduction in Chapter 1, that there was very little original research relating to local Children's Universities other than, principally, the excellent evaluations of John MacBeath (2008; 2010; 2013 for example). There has not been the depth of research into the needs and motives of stakeholders

during the formation of a local Children's University from its birth. In that sense the research is novel (see criteria 1 and 8 above). In addition the researcher opines that, in considering substantive literature in relation to findings from this particular context of a local CU, criterion 2 is met. Criteria 5, 7 and 9 (Phillips and Pugh, 2000) are satisfied because a specific variant of Grounded Theory Methodology is undertaken in order to explore the formation of a local CU from its very inception with particular regard to the needs of its stakeholders.

It is hoped that the research of this local Children's University has developed new insights both in terms of the value to the various stakeholders and in the application of the methodology undertaken.

11.2.1: Summary of findings relating to the research question

The study set out to ascertain the needs of stakeholders involved in the formation of a local Children's University. The needs of specific stakeholders were presented earlier in Table 16. In terms of a general summary these were identified as raising of children's aspirations, factors relating to community, the learning environment, the pedagogy and expertise of the university tutor and also the professional development of teachers and student teachers.

The study proceeded to identify the factors underpinning those needs. It was ascertained at the outset that this local CU was unique in its involvement of teacher education students as mentors allied to learning experiences delivered by a university lecturer in education. It soon became clear that the actions of stakeholders and factors influencing their needs were part of a complex adaptive system involving many internal and external drivers.

Construction of the central theory presented in Figure 9 and expanded in Figure 12 showed that teacher professional development was an issue that drove their participation in CU and that this in turn impacted on the learning of the children in the local CU learning experiences.

Activity within these sessions amounted to learning on several levels and in relation to child, teacher education student, teacher and tutor. It was a synergistic situation in which learning was non-formal, contextualised and sustained. The children benefited from expert pedagogy and additional adult support by potential teaching professionals. Teachers and teaching students

benefited from expert pedagogy coupled with opportunity to reflect on this and to interact with the tutor. Learning at each level was learner-centred as much as possible.

11.2.2: Coming to terms with the Grounded Theory Methodology

Careful consideration was given to identification and justification of an appropriate methodology for this study as described in Chapter 2. This is an important feature of any research study but it may be remembered that this researcher hoped to identify novel outcomes that may have an impact in the appropriate field. The research was intended to explore aspects important to stakeholders during the formation of this local Children's University. These aspects were apparent in data. Consequently these aspects were constructed through exploration of data with an 'open mind'. Conversely, the research intentions were not evaluative or confirmatory at the outset. There was no prior consultation of literature in order to set a context or to offer guidance, direction or development of research questions. In a sense this would have been impossible anyway because potential findings were unknown and the researcher would not know which literature to consult!

Having selected a methodology that may allow for isolation of new knowledge in this unique situation the researcher was faced with the task of engaging with this Grounded Theory Methodology as a relatively inexperienced researcher and certainly one who had not undertaken Grounded Theory Methodology before. The central issue was the fact that, as a scientist, the researcher found some features of Grounded Theory Methodology appealing and engagement with these aspects was an interesting facet of the research journey. There were two particularly attractive features of Grounded Theory Methodology in keeping with the researcher's scientific persona. These were, firstly, the fact that completely new 'theory' may emerge from such an 'open-minded' approach. Secondly, there was an element of rigour in adhering to aspects of 'method' such as constant comparison, use of modelling and theoretical saturation.

In terms of 'researcher positionality', the researcher had to be mindful of these features and having identified or 'found' something the researcher was required to make sense of it. Prior experiences and values were integral to this analysis. This resonated with constructivist approaches.

11.3: Evaluating the quality of the research

The discussion in the sections above has sought to explore the research in general by considering features of the theoretical model. Discussion has tried to draw attention to the originality of the research in particular and to issues that may be of value to other local Children's Universities, to schools and universities and to the professionals working within them.

11.4: Confirmation of findings through uninvited response to outcomes

The local Children's University initiative was not marketed to schools. This was a deliberate decision made by the tutor managing the local Children's University in the hope that the latter would be more easily managed bearing in mind the tutor had to uphold a full-time salaried post in addition. More schools heard about the initiative, and its value in terms of the positive effect that it had on children's learning and on the professional development of teachers, by 'word of mouth'. It would appear that such endorsement supports some of the key findings of the study as seen in the theoretical model in Figure 12 as stakeholders including teachers voice them voluntarily.

University colleagues, working in different subject areas, were impressed with the impact that local Children's University activity had on the teacher education student cohort. Colleagues planned and delivered in school, along with the researcher, a forensic science context that encapsulated learning in Science, Maths and Literacy. The entire first year undergraduate teacher education cohort participated in this experience. The colleagues were excited about the in situ practical nature of the learning experience that it offered to these students in particular. Colleagues' current workload prevented their greater involvement or adoption of the approach.

Furthermore, the aspect relating to impact on the learning of the student teachers was recognised by university colleagues and the approach continued to be welcomed by the students and schools to the extent that the initiative was to be more formally adopted as part of the university course of initial teacher education.

In terms of unsolicited observations made by a professional educator, a representative of a professional subject association observed a local Children's

University session led by the tutor and made recommendations to her superiors that the arrangement of such a session was an innovative and effective form of CPD for its professional participants. The representative felt that other current forms of subject-based CPD were not effective and often not valued by teachers for the reasons described earlier such as lack of teacher awareness, cost or lack of personalisation. This professional also observed that she had asked teachers what they thought of the potential arrangement when an expert subject practitioner was teaching their class under the teacher's observation. Teachers, she stated, would welcome the opportunity to experience such a learning situation.

The instances recounted above arose from the fact that the initiative attracted resulting recommendations, from chance situations or from incidental comment by teachers. These all serve to uphold features of the theoretical model. In addition they resonate with some of the features relating to rigour of the research outlined in Table 3, particularly, regarding credibility, transferability and confirmability.

With an eye on the transferability of the project, it has been seen that this local Children's University has been identified as being 'unique'. It is original in terms of its organisation of stakeholders and in the outcomes in terms of learning at different levels in terms of age and need. There is a strong possibility that this model will be of interest to other local Children's Universities and possibly to providers of CPD. But, further to this, successful adoption may depend on the availability of stakeholder expertise and stakeholder need. The use of thick description throughout this thesis will help them to assess potential transferability.

The researcher has attempted to signal key points along the research journey and in particular to justify key changes in direction that may result in adjustment to the theoretical model. It is hoped that this will highlight the dependability of the project to the reader as defined by Guba (1981, p. 81):

The naturalist thus interprets consistency as dependability, a concept that embraces elements both of the stability implied by the rationalistic term reliable and of the trackability required by explainable changes in instrumentation.

Constructivist approaches imply active participation. The researcher actively engaged with stakeholders in the field. This raises issues of potential bias. As

was seen in Chapter 4 this notion was of great concern to the researcher. Transparency in discussing this researcher positionality has hopefully demonstrated the drive for management of bias within the project. Furthermore, as theory is grounded in data it has not been a result of ideas forged as a result of the researcher's previous experience. Guba (1981) suggested the use of an audit trail to assist with confirmability. It has been stated that triangulation was achieved. In addition there are various points during the research where the researcher identified crucial issues and reflected upon potential outcomes. Examples of this reflexivity include extended deliberations over choice of research methodology (Chapter 2), consideration of researcher positionality (Chapter 4) and the thoroughness of data analysis and use of diagrams (after Clarke's work, see Chapter 3) and NVivo software (Chapter 7). In addition it must be remembered that, allied to this 'trackability', there were determined efforts to ensure theoretical saturation using a range of different stakeholder perspectives and documentation and that this addressed all aspects of the theoretical model.

The above reinforces the need for the reader to be able to judge the rigour of this research project.

11.5: Features of the study

The initial research question was very broad and necessitated a very open approach to data collection. This resulted in the collection of a large amount of data that was necessary to reinforce emerging hunches in order to achieve theoretical saturation and to therefore identify key categories. These categories were worthy of deeper exploration resulting in the construction of a valuable theoretical model. As a consequence of this there was also a mass of data that was considered as having limited value in exploring the key issues related to the needs of stakeholders in the formation of this local Children's University.

The study was very open and due to adoption of Grounded Theory Methodology there was no opportunity to identify what key features would be found that had not already been well researched until after construction of the theory. In fact some features, such as the raising of aspiration, were already known. As a result, such aspects were considered less significant in the development of the theoretical model and any 'digging deeper' was focused on

issues that were as unique and original as the local Children's University variant itself. These were concerned with teacher, student teacher, child and tutor learning and included:

- a variant of teacher CPD that met practitioner need in context and in real time and involving resulting professional dialogue with the 'expert' delivering sessions
- a variant of student teacher education that involved university tutor as 'expert' in a school context with non-hierarchical professional dialogue with teachers and tutor *in situ*
- children's motivation is heightened through exposure to a wide variety of contexts delivered through innovative pedagogy by a competent, enthusiastic 'expert'
- the university tutor is able to acquire feedback on student teachers' pedagogical and subject content knowledge needs and to engage in professional dialogue with teachers over their similar CPD needs
- all of the above are achieved through a more informal approach to learning and one that is less hierarchical and more social at all levels

All of the learning, at different levels, identified above may be said to play out within a complex adaptive system. One of the limitations of the study is that this system may be clouded by stakeholders' perceptions of each other and each other's roles. This may be largely a result of factors linked to status even though the context was intended to be as non-hierarchical as possible. This may have been superficial and further research would be needed to investigate the depth of integrity.

Degree of expertise is one salient feature emerging in relation to this aspect. There was evidence that, through delivering activities as part of local Children's University sessions, the tutor gained credibility in the eyes of teacher education students in terms of expertise. This may have been as a result of various features such as the tutor having the confidence in teaching ability to go 'under the spotlight', the tutor's evident expertise, the tutor's overt professional engagement with teachers or a combination of these factors. Further research would be needed to explore these issues.

The teachers saw the university tutor as an expert in science education. This

depth of this perception would be difficult to and its source may be difficult to isolate. For instance it may simply emanate from a sense of perceived status. There is a sense that it is rooted in the mutual trust that was fostered as a result of the positive impact that the tutor's practice was having on children's learning using what some teachers called innovative pedagogy. Further to this was the tutor's willingness to engage in non-hierarchical professional dialogue with the teachers in their own setting after their critical observation of the tutor's teaching. In terms of developing new approaches to teacher CPD it would be worth researching these aspects.

It has been noted that some of the learning that was taking place resulted in achievement of non-specific learning objectives. There were indications that it may have been these that impacted most strongly on motivation. More research would be needed to confirm this. Similarly more research would be needed to identify the most effective blend of specific and non-specific learning objectives, within a given context, that might maximize the potential for learning.

There were indications in data that the adopted pedagogy and engaging context inspired and energized teaching practitioners because they could see the effect on children's learning. It was hoped that the teaching practitioners, as a result, would adopt new ideas or modify their practice in order to incorporate them in a way that would be in keeping with their teaching style or professional identity. The pedagogy and contexts motivated children too. The teachers observed that participation in the local Children's University sessions had a striking positive impact on children's behaviour and on their attitude to learning. It would be very interesting to research if this motivation is sustained, in the case of learning in science, or if it is transferred to other areas of the curriculum at other times during the school day outside of local Children's University activity.

Data indicates that some of the features contributing to stakeholders' needs are skewed or influenced by Government policy. It has been shown that teachers' CPD activity is variable in terms of quality of provision, effectiveness of subsequent application of new learning and in terms of extent of access at points over a teacher's career. The reasons for this rest in financial constraints, lack of awareness, time constraints, career development issues often linked to promotion and the overcrowded National Curriculum to name a few. Activity within this local Children's University has been likened to the situation

encountered in some Teaching School activity. It would seem that there is a likelihood of different approaches and opportunities to professional development in the latter scenario. It may be interesting to research the impact on teacher CPD in each of these models and to try to identify its subsequent impact on children's learning.

11.6: Final reflection and comment

This study intended to explore the needs of stakeholders arising from their participation in a local Children's University. This was achieved by visiting participants in a wide variety of primary schools, in other workplace settings and in a university. The stakeholders themselves voiced these needs. Sometimes need was specific to a particular stakeholder and sometimes identified needs were common to two or more stakeholders. It seemed that the development of the needs of a particular stakeholder, in the context of a complex educational system, was influenced by the needs or actions of other stakeholders. The outcomes of conversations with and observations of, stakeholders in the field was supplemented by consultation of documentation such as emails, letters and reports.

A theoretical model was developed and refined and a comprehensive literature review was carried out. This allowed for a consideration of any similarities and differences between outcomes of the study and available literature. In turn, this prompted discussions proposing aspects of originality of the research and which consequently may be applied in other contexts.

The study described the experiences undertaken in the formation of a local Children's University. This entity was variously described as unique, innovative and effective in terms of learning outcomes and attitudes to learning. With that in mind it would serve as a guide for other local Children's Universities. It must be said that learning communities are greatly different in terms of, for instance, their needs or their population. It would not be wise to shoehorn particular communities into conforming to a particular model but this variant is there for them to follow or amend to suit their particular needs. It must be remembered that data was gathered in schools of widely differing demographic and yet there were similarly successful outcomes in nearly all of them.

The current drive by the Government in England and Wales to increase the

extent of school-based teacher training with a resultant reduction in Higher Education Institutions (HEIs), in effect through the formation of Teaching School Alliances, has obvious negative impact on these ITEs. The model of this particular local Children's University initiative indicates an opportunity for beleaguered ITE departments to get tutors into schools to input expertise with or without students. There seems to be a need for such teacher development, certainly in the area of science, using the approaches to CPD that have been outlined earlier in the thesis. It would also address many of the issues inhibiting much of the currently available formats for CPD such as time constraints, financial barriers and lack of awareness of such external provision. Teachers seem to like the CPD to come to them in schools and, in so doing as in the case of the local Children's University variant; tutors can raise awareness of other CPD opportunities. This would necessitate other CUs hosting this approach or more ITEs can develop this local CU variant.

Of course, this local Children's University model provided learning in context for teacher education students. There may be similarities to the learning by 'student' teachers that might take place in a Teaching School. Whether this is the case or not, this study will be of interest to those individuals who are involved in the development of Teaching Schools either through development of associated policy or practice. If the students are akin to apprentices will they still be susceptible to the negative mentoring issues that have been described previously? Will they be allowed to explore and develop their own professional identity or must they conform? These questions may be answered by reflecting on the context of student teacher learning in this local Children's University. A notable feature is that it is less formal, is non-judgmental and non-hierarchical. This may reduce feelings associated with power in such professional situations.

The research provided information about the simultaneous learning of children and various teaching practitioners in specific contexts. There was often an emphasis on more informal, or non-formal, ways of learning. This brings to mind a quote attributed to Albert Einstein who was said to observe 'It is a miracle that curiosity survives formal education' although what he actually said was:

It is nothing short of a miracle that modern methods of instruction have not yet entirely strangled the holy curiosity of inquiry. (Einstein, 1949)

It was observed during the study of this local Children's University that the curiosity and motivation of learners, particularly the children, was heightened. Was this due to the adopted pedagogy and informal nature of the context promoting independence and ownership of their learning? Did this result in a release from the compliance often associated with formal education? The combined voices of child and adult learners indicate that the answer to these questions is yes.

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Appendix A

Interview schedule

The interview schedule was very simple and very informal. The interviewer determined to allow the interviewee freedom to voice their thoughts openly. The interviewer intention was to preside as active listener. The schedule basically comprised:

Introduction – Make informal introductions and describe the background to the research and issues around anonymity and confidentiality (even though this has been secured formally in advance of any face to face engagement). Seek permission to record the interview using digital hardware and describe how this will be made secure using password and stored in secure office.

Main section of interview – This is based on very simple questions (invariably open) or statements such as:

Please describe what you know about the Children's University.

What do you think (schools/teachers/children/students/universities...) get from participating in a local Children's University? What are their needs? Why do you think this is? Do you think that these needs are met? Why do you think this is?

Would you like to say anything else about...?

Close – thank the interviewee for their openness and honesty and reaffirm anonymity, confidentiality and right to withdraw at any time.

Appendix B

Transcription 10 Interview with WP Manager

R: Can you tell me what you know about the CU?

I: It's a national initiative that works with primary schools. They are organised locally so each CU is run differently. It's about curriculum enhancement and also about outside learning. So, learning in the community and bringing that into children's lives. They get a passport and get stamps depending on what they've done. Then they graduate at the end of it. I think it can probably go into secondary.

R: Do you see graduation as being a key part of it?

I: For the kids? I think it's a good thing for students being recognised for doing something and recognising achievement and participation. I think the children like it. From a CU perspective it rounds things off so that there is an ending to it. They know where they are, what they've done and what they've achieved.

R: Parents?

I: yes they are involved and, the same as the school really, celebrating achievement of the children. Parents like doing that so graduation is a good thing.

R: What do you think teachers get from taking part?

I: I think they probably get the expertise of the people running the activities so for example you going into a school, they will learn from what you do, which they can then pass on to other kids. So there is kind of like a snowball effect to it. Also they are working with students. They, everyone learns from everyone else really. Students are learning, the teachers are learning from the students about how to communicate effectively in different ways.

R: When you say students, do you mean children?

I: No I mean university students. Because they are at the forefront of actually learning about primary school teaching now, so anything they bring into the

classroom, the teachers who have been in for five or six years are going to learn from them and take away something as well.

R: OK but teachers clamour for it and are really fired up about it and I just wonder why they go for it in this way and if there are any other reasons or...

I: I think it forms partnerships as well. I think schools like bringing people in from the outside world to talk to their children and a partnership between a school and the university is always going to be seen as a good thing in terms of their own development, in terms of their kids development and also from a university perspective, lecturer's development and students' development.

R: OK. The children, what do they get from it? Why are they fired up about it?

I: Seeing enthusiasm and seeing different ways of being taught and understanding that there are other ways to learn and it might not just be in the classroom. Especially outside activities, so getting the stamps from local community, things like museums. They can understand that education isn't just about school. You are always going to be learning and even the ones who are maybe not academic, they can engage with it because they are seeing other ways of learning.

R: What about the wider community including parents because parents have to endorse it. They have to support their child in taking part so why do you think they'll back it?

I: I think a parent will always support something that enhances their children's lives and as long as they see and understand the benefit of it, I don't see why a parent wouldn't back the CU. I think parents are harder to engage with because they are not at the school so you don't have an automatic way in. So if there is anyone who has a lack of understanding of the CU it is the parents because you are not talking to them, not talking to them directly.

R: Ok let's go to the end of the process and talk about the graduation last year and the possible effect that had on parents. How did you perceive that?

I: I think they came across as very proud of their children. I think they were a bit, not bemused, but there might have been a bit of a lack of understanding of what was happening and what they'd been involved with and during the presentation

you saw a realisation on faces of 'so this is what our children have been doing'. And we're really proud of them and look they are dressed in gowns. And when they were in the library they were proud and when you get them together, seeing it, those parents will always back it after that because they've seen their children enjoy something, achieve something and finish it. So parents who have seen it will be a really good endorsement for people coming into the programme.

R: OK. It's not my day job but what do you think I get from initiating the whole thing?

I: Stress!

R: What's in it for me why do I do it?

I: It relates to your job so I suspect you getting into classrooms you can then bring that back into your day job to teach new students going into primary schools. I think some university lecturers who have been in real life situations, jobs let's call them, and then come into academia may lose sight of the real world perspective at times but you working in primary schools through the CU will help the students you then teach but also I think you probably like working with children as well so it enthuses you. Also when you take students in to see how you teach is another way of teaching them so you are actually showing what your practice is rather than just talking about it in a lecture theatre. So you can bring in real life situations about how you actually sell a subject so in like behaviour management.

R: What do you think the university gets from it?

I: Publicity. Partnerships with schools. Closer links with the community. I think the main benefit is the students going into schools and seeing one of their lecturers going into school and teaching. So they are always going to get the main benefit from it and as a university if our students have a better experience they are more likely to get a better degree. Therefore, let's be honest, we rise up the league tables.

R: So you are talking employability?

I: Yes, employability.

R: OK. Three years ago I asked for some support in relation to setting it up and it wasn't forthcoming. I was asked to write a business plan and didn't have time to do it and things like that. Last year you offered some funding voluntarily. Can you tell me what prompted that kind of change?

I: Probably because I saw the benefit of it. I've seen the CI in place in other places and if you see the benefit of something you understand it. I also think that on a personal level I understand the widening participation side of working with schools. I'll always support something that I believe is going to develop children, especially in this area where there is a lot of deprivation. The research says you have to work with younger children to break down the barriers they have about university. It's not just about selling university to them but about making sure they have an understanding of what it is and that it is open to them. Taking students into schools is probably the best way of breaking down those barriers because they get role models from those opportunities. That's the reason I backed it and I will continue to back it if I have the money.

R: We have talked with representatives from other departments. What sort of things do you think affect other people's views on the CU and their potential support

I: I think it is a time issue. I think that is why there is resistance. It's not like when I go to a department and say I've got some year twelves coming in they have probably got a session they can roll out. Primary school kids are a different kettle of fish. They don't understand and don't know how to talk to them and they think they have to spend a lot of time planning and developing sessions for that age. I think on the other side I think they realise that students want to work with younger children and there is the employability side. I think that is why departments will get involved if you sell it right. But it is weighing up the employability, fitting it into their timetables and the planning.

R: Do you think that the involvement of our, now former, PVC for engagement had an effect on how the CU is viewed by people within the institution?

I: Yes I do. If you have the support of someone at senior management level you are always going to piggyback on it and get more backing. I don't know how well it was sold to everyone on campus that the PVC had actually come up and taken part. But I think that if you get the backing of senior management then I

suspect most departments will piggyback on it because their department will get more publicity and more money. It has wider implications of getting the campus into the press.

R: What do you see as the next steps? Where would you like it to go?

I: I think there's loads of ways it could go. I think more schools could benefit from it so opening it up to more schools will be great. Everything's got their own concerns and issues around it so time, money etc. The more students you can get into schools the better. Develop external learning. Get more companies involved. So in the long run it's not taking up so much of your time because you've got all these external companies and learning places where they can go and get stamps. So getting it out to more schools but that has got factors against such as money, time, staffing.

R: Do you think it is sustainable?

I: Yes I do. I think you've got the backing of schools and I think if there is the backing of schools they will push for it. I think the problem is internal rather than external. It's getting the backing of the campus and the university as a whole. It takes a long time to change things. These things need to be put in place before the sustainability goes.

Part B

3. Is the research population under 18 years of age? Y/N *Yes*
 If yes, are you taking the following or similar measures to deal with this issue?
 (i) Informed the participants of the research? Y/N *Yes*
 (ii) Ensured their understanding? Y/N *Yes*
 (iii) Gained the non-coerced consent of their parents/guardians? Y/N *Yes*
4. Will you obtain written informed consent from the participants? Y/N *Yes*
 If yes, please include a copy of the information letter requesting consent
 if no, what measures will you take to deal with obtaining consent?
5. Has there been any withholding of disclosure of information regarding the research to the participants? Y/N *No*
 If yes, please describe the measures you have taken to deal with this.
6. Issues for participants. Please answer the following and state how you will manage perceived risks:
- a) Do any aspects of the study pose a possible risk to participants' physical well-being (e.g. use of substances such as alcohol or extreme situations such as sleep deprivation)? YES NO
- b) Are there any aspects of the study that participants might find humiliating, embarrassing, ego-threatening, in conflict with their values, or be otherwise emotionally upsetting? YES NO
- c) Are there any aspects of the study that might threaten participants' privacy (e.g. questions of a very personal nature; observation of individuals in situations which are not obviously 'public')? YES NO
- d) Does the study require access to confidential sources of information (e.g. medical records)? YES NO
- e) Could the intended participants for the study be expected to be more than usually emotionally vulnerable (e.g. medical patients, bereaved individuals)? YES NO
- f) Will the study take place in a setting other than the University campus or residential buildings? YES NO
- g) Will the intended participants of the study be individuals who are not members of the University community? YES NO
- *Note: if the intended participants are of a different social, racial, cultural, age or sex group to the researcher(s) and there is any doubt about the possible impact of the planned procedures, then opinion should be sought from members of the relevant group.
7. Might conducting the study expose the researcher to any risks (e.g. collecting data in potentially dangerous environments)? Y/N *No*

8. Is the research being conducted on a group culturally different from the researcher/student/supervisors?
 If yes, are sensitivities and problems likely to arise?
 If yes, please describe how you have addressed/will address them. Y/N Y/N? No
9. Does the research/teaching conflict with any of the IFL's research principles?
 (please see attached list).
 If yes, describe what action you have taken to address this? Y/N No
10. Are you conducting research in the organisation within which you work? Y/N Yes
11. If yes, are there any issues arising from this e.g. ones of confidentiality, anonymity or power, because of your role in the organisation
 if there are, what actions have you taken to address these? Y/N No
12. If the research/teaching requires the consent of any organisation, have you obtained it?
 if no, describe what action you have taken to overcome this problem. Y/N Yes
13. Have you needed to discuss the likelihood of ethical problems with this research, with an informed colleague?
 if yes, please name the colleague, and provide the date and results of the discussion. Y/N No

* Organisational letter of consent included but this will be ongoing
 if you've now completed the proforma, before sending it in, just check:
 Verbal agreement reached with [redacted]

- a. Have I included a letter to participants for gaining informed consent? [redacted]
- b. If I needed any organisational consent for this research, have I included evidence of this with the proforma? *
- c. If I needed consent from the participants, have I included evidence for the different kinds that were required?

Lack of proof of consent attached to proformas has been the major reason why proformas have been returned to their authors.

This form must be signed by your supervisor and the IFL Ethics Committee representative for your area. Once signed, copies of this form, and your proposal must be sent to Mrs Jackie Lison, Centre for Educational Studies (see flow chart), including where possible examples of letters describing the purposes and implications of the research, and any Consent Forms (see appendices).

Name of Student/Researcher David Ovesta
 Signature Date 7/11/08

Name of Supervisor/Colleague NIGEL WEIGHT
Signature *Nigel Weight* Date 13/4/08
Name of Ethics Committee member MR Biffey
Signature *MR Biffey* Date 20/1/08

Appendix D

Letter of Consent

What are the issues for stakeholders informing the development of a Children's University in [REDACTED]

I have read and understand the accompanying information sheet relating to the proposed research into the formation of a Children's University in [REDACTED]

I consent to participate in this research study being conducted by David Overton of [REDACTED]

The purpose of the research is to learn about factors affecting the formation of a Children's University in [REDACTED] and if the needs and expectations of those taking part, such as children, parents and teachers, are met. I understand that the findings from this study may be useful to researchers and schools because ideas such as a Children's University may support learning in schools. There are no known risks involved in taking part in the study.

All participants will remain anonymous in the report, as will schools, companies and related agencies.

I understand that I may be invited to answer some questions by Mr. Overton and that this will be recorded and that I have the right to review, edit or erase the recording in whole or in part at any time. In addition, I may refuse to participate or may withdraw from this study at any time without any negative consequences.

All related information and recordings will be locked in a filing cabinet in Mr. Overton's office at [REDACTED]. They will be destroyed after the research project is completed. No information that identifies me will be released without my separate consent, except in the unlikely event that this would be required by law. I acknowledge that I have received a copy of this form and accompanying information.

If I have any questions, comments or concerns about the study or the informed consent, I may write or call Mr. Overton at [REDACTED]

Name
Signature
Date

Information for Participants

Date: [REDACTED]

Dear Participant,

I am currently conducting a research project designed to study the issues affecting the formation of a Children's University in [REDACTED]. Research will take place in participating schools and they have given permission to conduct Children's University sessions on their premises.

The Children's University is intended to be somewhat similar to those operating in towns and cities up and down the country. They are intended to raise children's self esteem and enhance learning. One difference in the [REDACTED] project is that it is hoped to meet the needs of the children, the school and the community more specifically. Events take place over 4 weeks with one session per week each lasting about 1½ hours. Children will work in groups during the sessions and will be supported by appropriate mentors, e.g. students training to be teachers, school staff, governors, etc. Sessions will be led in the early days of the project by David Overton, a qualified teacher and university lecturer. An impression of activities and further related information can be had by visiting the [REDACTED] Children's University website at [www.\[REDACTED\]rensuniversity.co.uk](http://www.[REDACTED]rensuniversity.co.uk)

You may be asked to take part in an individual recorded interview.

Thank you in advance for your cooperation and support.

Sincerely,

David T. Overton
[REDACTED]