



SCHOOL OF EDUCATION

A learning design approach for exploring a framework for mediating collaborative
knowledge-building in the Caribbean Educators Network

By

LeRoy Hill

BS, PGTC, MA

Thesis submitted to the University of Nottingham for the degree of
Doctor of Philosophy

September 2011

DEDICATION

To Jehovah - God All Mighty,
To my mum - Vandalyn Fleming

You are the wind beneath my wings

ABSTRACT

Collaborative knowledge-building (CKB) in online social networking settings is an area of concern among educators and researchers alike. The focus however, seems to be on how social networking sites mediate the process of CKB while neglecting the role of design in making such knowledge-building and collaboration a sustainable activity. The relative lack of attention to design, points to the need for methods to guide the development of CKB environments. Additionally, despite the increasing use and benefits of informal online learning approaches for professional development, many Caribbean educators are still not making effective use of this approach to their professional development. This thesis addresses these issues and contributes to work in the field of learning design in the social networking setting.

This thesis therefore draws on a three-year designing for learning action research exploration in the Caribbean Educators Network (CEN) which aimed to establish possible benefits from a framework-driven approach, given that the development of informal online social networking environments are not traditionally driven by any particular theoretical or design frameworks. Using the research findings, guided by activity theory (Leont'ev 1978; Engeström 1987), group cognition (Stahl 2005; Stahl 2006), community of inquiry (Garrison et al 2001), I advanced a conceptualisation of a framework to mediate collaborative knowledge-building in the CEN. The framework is a focus on processes (what is done) and presences (the environment or condition) and is expressed along 4 themes: community presence, cognitive presence, moderating presence and 'artefactization' presence.

In addition to the development of the mediating framework, the exploration also resulted in a meaningful experience and approach that revealed design for learning in the informal online social networking settings as a dynamic, living, messy, critical-reflective and participatory process of meaning-making.

Keywords: Learning Design, Design for Learning, Action Research, Collaborative Knowledge-Building, Participatory Design, Activity Theory, Group Cognition, Computer Supported Collaborative Work, Socio-Cultural Theory.

ACKNOWLEDGEMENTS

My sojourn into this research exploration could not have been possible without the help of others.

Foremost I am deeply grateful to my supervisors Prof. Gordon Joyes and Tony Fisher, who were outstanding guides, providing exceptional advice and mentoring during the research journey. Their support went a long way in making this thesis a reality and their constant admonition to look at the bigger picture kept me focused despite the difficult challenges.

I would like to thank my colleagues in Anguilla for their support and contribution to my development over the years and to the Government of Anguilla for granting me the study leave to conduct this research exploration.

I am also thankful to the members of the Caribbean Educators Network (CEN), without whom this research exploration would not have been possible. Particular mention must be made of the members of the CAG and my colleagues Camille Dickson-Deane and Genevieve Baptiste for their insightful and valuable contributions.

Special thanks to the staff at the University of Nottingham, School of Education for their constant support over the tenure of my programme. I am grateful to Prof. Pat Thomson, Dr. Peter Gates, Dr. Kay Hawe and Dr. Andy Hobson at the School of Education for their helpful training in research methodology and academic writing and Jodie Smith, Jane Coulson and Jackie Stevenson the research office. Thanks also to Mr Sanjay Sharma from Information Services for his kind support and services over the years.

I am also deeply appreciative of the mentoring, comments, prayers, support and advice I received from a number of my colleagues, with particular mention of all members of C11 who were my support group throughout this journey: Dr Zhiwen Hu, Dr Nadeem Khan, Dr. Khalid Musa, Andy Coverdale, Dr Vesile Alkan, Karim Azman, Vanessa Hayward and Beiyi Ruan. Special thanks to Andy for granting me the opportunity to work along with him in the social media training courses, and for Tracy Sisson from the Jubilee Graduate Centre for so willingly accommodating us.

Thanks also to other members on the C floor: Garfield, Anita, Julia, Madeline, Kaurin, Zac, Claire and Faizah who were a constant source of encouragement. Also to my Caribbean colleague Caron Weston who was a strong source of motivation and encouragement. I must single out Mrs Gillian Johnson and Mrs. Sarah Lewthwaite for their kind and friendly support over the years.

Most of all, I am deeply indebted to Mrs Ivy Plank, who provided practical and timely editorial comments and feedback on my writing.

I could not have completed this journey without the help and support of my family: my parents, Pat and Vandalyn Fleming; my wife, Felicia Hill; and children, Odarie, Leeicia, and Othello. Thank you for their unwavering love and support and also for granting me the opportunity to be away from home for so long.

TABLE OF CONTENTS

DEDICATION	i
ACKNOWLEDGEMENTS.....	iii
TABLE OF CONTENTS.....	v
LIST OF TABLES	viii
LIST OF FIGURES	xi
1. Chapter 1	1
1.0 My personal background and context	1
1.2 The Research Context: The Caribbean Educators Network (CEN)	6
1.3 Organisation of thesis	7
1.4 Thesis structure	10
1.5 Conclusion.....	12
2. Chapter 2	13
2.1 The Caribbean Context.....	13
2.2 The Theoretical context.....	25
2.3 Conclusion.....	42
3. Chapter 3	43
3.1 The Theoretical Thread	44
Ethical challenges and concerns.....	55
3.2 The Action Thread	62
The Research Design	62
AODM: An Activity theory methodological approach	78
The Research History	83
Conclusion: The Way Forward.	86
4. Chapter 4	87
4.1 Planning: The Action-Cycle Design Process	88
4.2 Acting: Observing and Analysing Process.....	90
4.3 Reflection: Discussion & Literature review	104
4.4 Conclusion: The Way Forward	108

5. Chapter 5	110
5.1 Planning: The Action-Cycle Design Process	110
5.2 Acting: Observing and Analysing Process.....	114
5.3 Reflection: Discussion & Literature review	152
5.4 Conclusion: The Way Forward	156
6. Chapter 6	157
6.1 Planning: The Action-Cycle Design Process	157
6.2 Acting: Observing and Analysing Process.....	160
6.3 Reflection: Literature Discussion	182
6.4 Conclusion: The Way Forward	188
7. Chapter 7	189
7.1 Planning: The Action-Cycle Design Process	190
7.2 Acting: Observing and Analysing Process.....	192
7.3 Reflection: Discussion & Literature Review.....	214
7.4 Conclusion: The Way Forward	224
8. Chapter 8	225
8.1 Research Questions	225
8.2 The Research Journey	226
8.3 The Research Outcomes.....	242
8.4 The value of the research project	244
8.5 The Challenges and Limitations	247
8.6 Parting reflections: The nature of the learning design exploration.....	248
8.7 The way forward: examining the utility of the framework	254
9. References	260
10. Appendices.....	284
The Appendix1: CEN online questionnaire	284
Appendix 2-Transcription of Synchronous Meeting	290
Appendix 3 – Diversity of Learning Group Transcript	319
Appendix 4- Table of Coding decisions.....	324
Appendix 5- Cycle 4 Coding for processes and presences.....	330

Appendix 6 - Mapping The Two Approaches.....	337
Appendix 7 – Frequency Codes Nov. 28 2009 (cycle 3).....	339
Appendix 8 – Average Coding after coding 3 times (Cycle 2)	340

LIST OF TABLES

Table 2.1 - Proportion of trained primary school teachers in 1957	16
Table 3.1 Adaptation of action research goals and validity	58
Table 3.2 - The Research Design	66
Table 3.3 - AODM's Eight-Step-Model	79
Table 3.4 - The AODM's Activity Notation	80
Table 3.5 - AODM's Technique of Generating General Research Questions	81
Table 3.6 - Research time frame	84
Table 4.1 - Research questions, Methods and time frame of this cycle.	89
Table 4.2 - Country membership (up to March 30 2009)	91
Table 4.3 - Membership interests.	92
Table 4.4 - Responses from the online survey	94
Table 4.5 - List of interventions.....	97
Table 5.1 - Outline of plan for data collection and analysis for cycle 2	113
Table 5.2 - Members in groups within the CEN	115
Table 5.3 - Groups of the CEN.	117
Table 5.4 - the level of interaction in groups.....	119
Table 5.5 - CEN membership by country	120
Table 5.6 - The gender composition of the sample	121
Table 5.7 - Age data of the sample n=438	122
Table 5.8 - Working environment of members	122
Table 5.9 - Returning vs. New visitors to the network.....	123
Table 5.10 - Key for interpreting Figure 5.4-5.7	127
Table 5.11 - A listing of sessions conducted in Elluminate Live	128
Table 5.12 - Frequency of coded objective statements	132
Table 5.13 - Example of statements	132
Table 5.14 - The discussion topics within Groups.....	136
Table 5.15 - Average coding outcomes after coding sessions 3 times.	146

Table 5.16 - Mapping Operational processes & highlighting tensions	149
Table 5.17 - Contradictions that emerged from of the analytical process.....	151
Table 6.1 -The timeframe and methods used	159
Table 6.2 - Profile description of CAG members.	163
Table 6.3 - The level of CAG activity	165
Table 6.4 - Members who participated in each synchronous meeting session. .	165
Table 6.5 - Activity as posts in asynchronous CAG discussion forum	166
Table 6.6 - Activity in CAG discussion forum	166
Table 6.7 - The categorisation of tools.....	168
Table 6.8 - The rules and norms that existed within CAG.....	169
Table 6.9 - Summary of meetings conducted in Elluminate Live	174
Table 6.10 - Codes from transcript of synchronous meeting Nov. 28 2009.....	176
Table 6.11 - The design suggestions that emerged from analysis	180
Table 6.12 - Count of categories from Table 6.11	181
Table 6.13 - Themes with description and theoretical mapping	187
Table 6.14 - The 1 st iteration of the CEN e-mediating framework.....	188
Table 7.1 - Methods and timeframe.....	191
Table 7.2 - Profile description of Diversity of Learning group members.	193
Table 7.3 - Listing of Coders	195
Table 7.4 - List of inter-subjective codes	198
Table 7.5 - Showing operational definitions and indicators of categories	207
Table 7.6 - Mapping of each message unit to processes and presences.....	210
Table 7.7 - Showing the themes represented in each message unit.....	211
Table 8.1 - Mapping research questions to tension and intervention	230
Table 8.2 - Coded design suggestions	234
Table 8.3 - Linking categories to theory.....	235
Table 8.4 - The coding guidelines.....	238
Table 8.5 - Linked themes to each message unit.	240

Table 8.6 – Disseminating the research.....	259
---	-----

LIST OF FIGURES

Figure 2.1- Map of Caribbean. (Source: CIA world Fact book)	14
Figure 2.2 – Self-directed learning matrix (Jarche 2009)	25
Figure 2.3 - Basic subject-tool-object mediation.....	28
Figure 2.4 - Leontev’s level of activities	28
Figure 2.5 – The Activity System (Engeström 1987)	29
Figure 3.1 – A simple moment in an action research cycle	52
Figure 3.2 - A Four-moment cycle source: (Smith 2009)	55
Figure 3.3 – The multiple roles in the research process.	61
Figure 3.4 - The Research Design of Research	63
Figure 3.5 - Screenshot of a CEN group discussion forum.	72
Figure 3.6 - CEN Elluminate Live session	74
Figure 3.7 - Mapping AODM Operational Processes (Mwanza 2002, p.162)	82
Figure 3.8 - The timeline of research	83
Figure 3.9 –Map of activity theory in the research -A3 insert	85
Figure 4.1 CEN membership growth 2008-2009	92
Figure 4.2 - Profile page showing the changes implemented	96
Figure 4.3 – Relationship between the 3 planes of analysis.....	99
Figure 4.4 - The initial learning design activity system	100
Figure 4.5 - Learning design activity system (The Actual) after intervention ...	101
Figure 4.6 - The initial learning design activity system	102
Figure 5.1 – Member participation, network activity and Intrests	111
Figure 5.2 - Age/Gender distribution of membership.....	121
Figure 5.3 – Showing the average length of time visitors spend on the site. ...	124
Figure 5.4 - Depth of visits on CEN.....	125
Figure 5.5-5.8 RSS Feeds	127
Figure 5.9 - Object as problem or working space.....	130
Figure 5.10 - Profile page of a CEN member	131

Figure 5.11 – A snapshot of CEN in NING	135
Figure 5.12 - The discussions in a group.	136
Figure 5.13 - Snapshot of the greeters.....	139
Figure 5.14 - Group initiators with the number of groups created	140
Figure 5.15 - CEN Activity System – B	144
Figure 5.16 - Tag Cloud of Codes that emerged from group discussions.	147
Figure 5.17 – Stahl’s model of knowledge-building in groups (Stahl 2000)	154
Figure 6.1 - The activity system before design intervention	172
Figure 6.2 -The CAG activity system	173
Figure 6.3 – Coded discussion.....	177
Figure 6.4 – Coded discussion.....	178
Figure 6.5 – coded discussion	178
Figure 6.6 – ‘Reflective statement’ coded discussion	179
Figure 7.1 – Diversity of Learning group activity system	193
Figure 7.2– The learning design activity system - D.....	194
Figure 7.3 – Snapshot code decision of 4 coders with inter-subjective code	197
Figure 7.4 – Message unit 1-4.....	200
Figure 7.5 – Message unit 7.....	201
Figure 7.6 – Message unit 8, 9 and 10	201
Figure 7.7 – Message units 11, 12.....	202
Figure 7.8 – Message units 13, 14.....	203
Figure 7.9 - Message units 15, 16	204
Figure 7.10 - Message units 18, 19, 20	205
Figure 7.11 – Message unit 21	206
Figure 7.12 – recoded message unit 1	209
Figure 7.13 – recoded message unit 13.....	210
Figure 7.14 – recoded message unit 19.....	210
Figure 7.15 – Comparison if coding (comparing Tables 7.4 and 7.6).	213

Figure 7.16 – A framework for mediating collaborative knowledge-building	223
Figure 8.1 - Outline of sub research questions	226
Figure 8.2 – Design Activity system – B	228
Figure 8.3 – Initial CEN (community plane) activity system interpretation	228
Figure 8.4 – CEN activity system – B	229
Figure 8.5 – The CAG Activity System-A.....	233
Figure 8.6 – The initial collaborative knowledge-building framework	236
Figure 8.7 – The learning design activity system - D.....	237
Figure 8.8 – Group coding results for message unit 1 and 2.....	237
Figure 8.9 – The CEN e-mediating framework.....	241
Figure 8.10 – Research outcomes by cycle	242
Figure 8.11 – The epistemological development in research.....	251
Figure 8.12 – The Web 2.0 scenario activity system.	255
Figure 8.13 – Proposal for classroom practice implementation	258

1. Chapter 1

Background to the Research

Introduction

My approach to this research has been framed in the Caribbean online social networking context and guided by the works of (Lave & Wenger 1991; Guskey & Huberman 1995; Putnam & Borko 2000; Borko 2004; Shulman & Shulman 2004), who hint professional development as a complex process that can be enhanced in a community where individuals learn through collaborative support. The research is also a focus on the process of design that is needed to support the development and maintenance of collaborative knowledge-building in the Caribbean informal, online social networking environment. The idea of process-driven design in online settings suggests the need to use tools and harness processes as mediating artefacts in advancing a framework for collaborative knowledge-building within the research setting. This research has, therefore, a double focus: collaborative knowledge-building and design for learning in the informal online social networking setting. The concept of collaborative knowledge-building for educators in an informal online setting implies the active participation of educators as important components that have been neglected in conventional top-down professional development approaches, and deserves some attention. My approach in this research will therefore be to extend work in the aforementioned areas by exploring the possibility of developing a framework as a mediating artefact in sustaining collaborative knowledge-building within the Caribbean Educators Network (CEN). In order to remain true to the way the study was conducted, it is my intention to relate events of this study as a lived experience in a way that captures the historicity of the experience. The research progresses through four action research cycles, as it addresses the wider research question on the development of a collaborative knowledge-building framework. The context in which the research is situated is introduced in Chapter 2. In this chapter, however, I depict my personal background and, in doing so, pave the way for the declaration of my values as researcher and designer in the research. I shall devote the following section to doing just this.

1.0 My personal background and context

The pursuit of education is a lifelong journey, and every story has a deeper meaning that drives the narrative. I was born in the island of Dominica but lived most of my

life in Anguilla, where I attended secondary school. From a young age I realised that I had a speech disorder, and I did not need any labelling to know that I would have to work much harder than the rest of the students to fit into the wider learning setting. This challenge went unnoticed by many, since I always kept myself in self-imposed isolation to avoid speaking in social situations. Undoubtedly such isolation had its effects on my learning and interaction with others. The constant complaints of others' not being able to understand my enunciation and juxtaposition of words meant that I had to make a strenuous effort to speak articulately. It was during the pursuit of my education at University of Southern Caribbean in the twin island republic of Trinidad & Tobago that I realised that fear of speaking would only lead to my educational demise. That realisation jolted me into the beginning of building networks and expanding possibilities for me to interact and converse with others about various issues.

My story continued to unfold in September of 1995, when on completion of a BS in Social Studies, I was hired as a teacher in the Humanities Department of the Albena Lake-Hodge Comprehensive School in Anguilla. Being a teacher of Social Studies, Geography, History, Caribbean Studies and Information & Computer Technology (ICT), meant that I had to master the spoken word in order to communicate effectively with my students, not to mention my colleagues. My deliberate effort to master the spoken word paid off and I had also gained the confidence to build more social networks and expand my horizon as an educator.

One of the greatest challenges facing me was trying to link theory to practice. I discovered that collaboration was a way of making sense of my teaching practice as well as contextualising my personal professional growth and development into a pragmatic approach that was engraved in my professional development learning style. The use of collaborative learning did not only resonate with my personal ideals and philosophy, but it was also an important part of my approach to pedagogy in the classroom. I found that it was equally liberating to see how students benefited from the many opportunities of collaborative learning presented to them. Likewise, the greater focus on student inquiry and discourse helped shape my own development as I tried to make sense of professional development initiatives at the local (Anguillian) level. This was a challenge, because there seemed to be a mismatch between the areas that I needed improvement in and what was being offered at the local level – a problem that was by no means peculiar to me. Policy and programmes dictated that educators focus on issues such as classroom management, disruptive

behaviour and differentiated teaching. The aims and objectives of local training projects and workshops were all good, but they did not match what I wanted to learn, so in 1999, I began to search for ways to fill this void. My interest in technology, curriculum design and teacher education found new expression and development in a certification programme offered by the University of the West Indies Joint Board of Education. My research project for the programme focused on electronic media and the education system, which provided an overview of the apparent mismatch between what research revealed about student learning, and the approaches that were actually being used in the classroom. I had all the while continued to network with individuals in the island who had similar interests, as I had been doing prior to starting the certification programme. Surprisingly, my networking interest drew me away from the boundaries of the education sector to individuals who were aligned to computer programming and information services.

This networking culminated in the establishment of a local computer club (Anguilla Computer Club¹), which attracted strong interest from children and adults alike. The goal of the club was to create awareness of computers as tools in facilitating the learning process, while at the same time encouraging individuals to become computer literate in order to perform satisfactorily in a technologically focused society. Through the activities and influence of the club, a number of developments were recognised in the country. These included, for example, greater interest in information and computer technology, and computer programming and hardware support and repair. As president and co-founder of the computer club, I was able to network with many individuals who donated time, money and computers to extend the work for a period of six years, after which the club was dissolved having served its purpose. By 2000 the effects of the Anguilla Computer Club were visible, with computers becoming wide-spread, and more and more individuals having greater access to computers, thanks, partly, to favourable government customs import incentives.

My efforts in inspiring change in technology education did not go unappreciated by my colleagues. I was elected to serve as General Secretary of the Anguilla Teachers' Union, a position which allowed me to share my vision of collaborative knowledge sharing initiatives, and to challenge the established top-down model of professional

¹ See <http://news.ai/ref/compclubhist.html> and <http://computerclub.ai/> for full historical reference

development. About the same time, in 2001, I started to look for ways in which I could enrich the learning experience of my students, and I discovered Moodle – an open source learning management system. Moodle was still early in its development, and it took a while before I could utilize it for my students. However, in summer 2002, I created a local Moodle site (<http://classnotes.ai>). The site elicited unprecedented support from students in Anguilla, and soon began gaining the attention of other students across the Caribbean. I wanted to understand how students were using the platform to learn, and I quickly found out that they were using it for facilitating their own learning in ways I had not envisaged. For example, very few students made use of the class notes I had provided on the site. Instead, they were communicating with one another and sharing links, suggestions and ideas. Interestingly, the students also posted questions on aspects of the lesson on which they needed clarification. This gave me insights into how online collaborative efforts could serve as meaningful e-learning experiences for secondary school students in the Caribbean region. After serving two terms as General Secretary, I was unanimously elected President, a post which landed me in an even greater position of influence to stimulate changes within the education sector on the island.

In 2003, I enrolled in a part-time Masters programme in Instructional Design and Technology at Virginia Polytechnic Institute and State University, North America. The course supplied me with the scientific, methodological and theoretical underpinnings for instructional design. Attention was given to the creation of multimedia materials, but there was little focus on learning in online network environments or on facilitating collaborative knowledge sharing. I continued my search for understanding how to design for learning in an online network. I joined the Moodle community, and realised that though Moodle was being used in so many contexts not much emphasis was being placed on the role of collaborative elements of the environment in influencing learning. My interest in online collaboration and social networking eventually led to the discovery of NING, an online social platform that allows individuals to create customised online social networks. And so, on March 21 2008, I created a NING network, which I called the Caribbean Educators Network (CEN). I invited my teacher colleagues, both local and regional to join, and was motivated by their comments and commendations. The network members valued the CEN because they could “use this platform to share knowledge with one another” (Personal communication from CEN member, 2008). The network continued to grow, but this did not distract me from my initial interest in design for learning and collaboration in Moodle.

I started my research programme at the University of Nottingham, UK in September 2008 with the intention of exploring a design framework to facilitate collaborative knowledge-building in an open Caribbean-wide Moodle e-learning initiative that would support students who would have been excluded from school. However, my interest in this theme was overtaken by the activity and developments that were taking place in the CEN, which persuaded me of the logic of changing my research focus. Discussions with my supervisors and others confirmed the wisdom of my decision, since it addressed similar issues of design for learning. Initial recommended readings in the area of teacher knowledge and professional development heightened my interest in the network, and kindled the desire to understand how it could be further positioned in the Caribbean context. With this in mind, I started to explore the possibility of creating a design framework to support professional development in the research setting. Thus the research was influenced by my values, which also stemmed from the way that I visualised learning, which is the topic for discussion in the next section.

My views on Learning

My views on learning lean on the idea that knowledge is a 'dynamic' process - a process that requires the active participation of the learner in building and constructing knowledge. This knowledge, however, is developed through a process of manipulation of tools (both human and non-human) and environment (both formal and informal). This perception of knowledge and learning is influenced greatly by the works of Vygotsky (1978) who argues that learning takes place through mediation - through the use of tools in the environment. Human interaction plays a crucial role in this knowledge-building process. Individuals must act on and interact with the tools and environment to arrive at their knowledge. Based on this view, learning should take place within a flexible, appropriate environment that allows for learner autonomy within the boundaries and confines of particular community interests. This method of knowledge construction is unlike more prescriptive models which advocate centrality in a tool or environment, and allows for little agency of the learner in the process. I also subscribe to the view that meaningful learning occurs when the learner constructs avenues for learning through active discourse within a formal or informal setting that enables this type of interaction to take place (Wells 1999). It is this human knowledge that is passed on within a community that sustains it through the use of network building and tools. These tools can be language, individuals, and technology such as computers and, in this research context, an online social networking platform. To this end,

social networking technology is recognised as a mediator of human knowledge, making it possible to follow others' understanding and knowledge. This learning process is further encouraged by a sense of community and belonging which can potentially lead to a sense of shared knowledge within the community. I explore these ideas in more depth in the thesis as part of this research journey, and take the opportunity that this provides to further develop my theoretical and practical understanding of design within the CEN context, which is described briefly in the next section.

1.2 The Research Context: The Caribbean Educators Network (CEN)

The CEN, created on March 21 2008, is an online network of educators built on the social networking technology of NING, which provides the platform for individuals to build social networks of special interest. The CEN therefore works on the technological and social affordances of the NING platform, and is similar to popular social networking platforms like Facebook. Members of the CEN use features such as posting on walls and discussion forums; and they upload and rate media content and establish links with like-minded individuals in the Caribbean. Therefore the major means of communication within the CEN is asynchronous in nature. However, members of the network also use Elluminate Live to conduct synchronous events which are promoted in the wider network. The network, numbering 959 as of February 2011, contains individuals with varied interests. A detailed description of the network is offered in Chapter 5, but in the next section I shall continue by outlining the research question and the research approach which I adopted.

The Research question

This research was triggered by an interest in designing synchronous network-wide continuing professional development (CPD) activities. I wanted to devise a framework that allowed synchronous activities around the interests of members. However, over time my interest in the wider network activities was overshadowed by the activity materialising in a number of active groups within the network. Even so, not all groups were engaging in this collaborative knowledge-building activity effectively. It appeared that some groups needed guidance in how to effectively collaborate and build knowledge collectively. To this end, I wanted to explore how I could support the formation of these collaborative knowledge-building groups and sustain them. The issue of designing a framework outside the community and imposing it on the community ran counter to my views. Instead, I wanted to work

within the community to understand how collaborative knowledge-building was taking place. This was the substance of the questions that I wanted to address, but these questions were guided by the general research question, "What is the nature of a learning design approach for exploring a framework for mediating collaborative knowledge-building in the CEN?" With this in mind, I adopted an action research methodology which involved a plan, act and reflect approach, which is described in detail in Chapter 3. There were four cycles, each of which explored specific research questions that addressed this wider learning design research question.

1.3 Organisation of thesis

Context

In this section I aspire to justify adopting an approach that mirrored the recursive action research processes. As a researcher it made sense to me to grant myself the freedom to mobilise different literatures and methods at each stage of the process as the research questions developed. Accordingly, I adopted a recursive approach to the organisation of the thesis, which allowed me to plan the methodology in the planning stage, present and analyse data in the acting stage, and reflect critically through the literature on the outcomes of the planning and acting stages as a way of preparing for the next cycle. Consequently, this approach was not a straightforward one, especially as I was in the field observing, planning, collecting and analysing data, and concurrently trying to make sense of research cycle outcomes. My approach to writing this thesis can be aptly portrayed as thinking on my feet and recording many of my reflections and observations while the research was in progress. However far-fetched this may seem, this was one way I felt I could make sense of the emerging data. Writing therefore became a filtering reflective process – a process to contextualise my thoughts, in trying to situate myself in the practice of academic writing. Before I make headway into the terrain of the thesis writing process, however, I think it is necessary to provide the basis for my conviction about writing in situ.

The qualitative thesis writing process brings to the fore the qualitative vs. quantitative debate. In trying to depart from the positivist tradition, some academics, like Wolcott (2008), see the qualitative research writing process as being aligned to the arts. While I believe that there is merit in this view, I prefer to lean more on the idea that the writing process is part of a wider social practice

(Fairclough 1993; Kamler & Thomson 2006) that adheres to a particular research paradigm which is responsive to context. Certainly, for the positivist researcher this holds true, and this is evident in the way in which findings are reported. However, such reporting should not be applied universally at the expense of losing cultural responsiveness or fitness for purpose, and such writing should be situated in alternative settings. This position was particularly applicable in this case since writing and meaning-making in this research setting were continuous, serving as a logical way to allow the knowledge to unfold. Lincoln & Guba (2005) envision alternative writing approaches as expanding the reach of understanding, voice and variation in the lived human experience. This dynamic and iterative process of thesis writing is what Richardson (2003) calls 'writing as inquiry' – a method of knowing. In justifying writing as an academic social practice, Kamler & Thomson stretch the concept of writing as inquiry further by denoting writing as thinking, in that "we write to work out what we think (Kamler & Thomson 2006, p.4). The approach of writing to think establishes that as academics we should not dichotomise writing and researching, since it is through active textual discourse that we create and identify the knowledge that is bounded in our academic language (Kamler & Thomson 2006). Language, however, seems like an elusive subject-matter to deconstruct, and there is much debate and discussion on how meaning is interlinked to language (Rorty 1992; Derrida 1998; Foucault 2002; Richardson & St. Pierre 2005), which I do not intend to replicate here. The discussion on language, however, points to the dynamic relationship that exists between language, writing and the meaning-making process. This meaning-making process, (through the planning) forms the central part of the research process that shapes the action. Therefore, if writing is a social action (Kamler & Thomson 2006) that creates meaning (Richardson & St. Pierre 2005), then it only follows that the writing process be represented in a manner that follows the thinking process as it unfolds in the cultural-historical context of the study.

Therefore, contextualising the literature review and methodology in a recursive action research format was fitting. Through this approach I captured and represented the process as a lived experience in such a way that it showed how my thoughts developed. Using this recursive process, I utilised writing as a way to evidence how I made sense of aspects of the process - (methods, analytical frameworks, literature and emergence of research questions). This writing-in-situ allowed me to write my way into a particular discourse that I would not have otherwise occupied, given the traditional format of reporting. Additionally, I felt that

this alternative format served as a way to bring more responsiveness to the research process. This led to writing in a non-traditional format.

A non-traditional format

My initial attempts to structure the thesis following the traditional format and configuration encountered much difficulty. In trying to represent the recursive research process I realised that the traditional reporting format for the thesis was not a good fit, and I was driven to rethink the legitimacy of the standard format. I felt that such an approach was not going to accommodate an honest representation of the research development. The approach seemed impractical, given that the research design was a work in progress - unfinished business - and, as such, the approach did not fully resonate with the methodological assumptions of action research which are described in Chapter 3. I was still in the process of collecting, transcribing and analysing data, and this situation made the traditional reporting format seem incongruous with the way things were unfolding: I could not see the logic in representing a cyclical iterative process in a strictly linear format. I therefore concluded that in order to be true to the process, the development of my academic voice, and the representation of the interpretations, I needed to reconsider the configuration of the thesis, particularly since writing for me was a process of motivating me to think. The fact remains that the traditional thesis format is based on hypothetical deductive reasoning, whereby a literature review is conducted to establish what is already known, and then the experiment is designed and reported. However, what I was doing in this research was more on the complex, investigative, messy frontier of a research paradigm that was taking place in a particular sequence of planning, acting and reflecting, and therefore needed to be reported so that the historicity was captured in its most truthful manifestation.

At cycle intervals I took a step out and reformed my ideas, an action that is represented in the reflective and planning sections in the thesis. This step out afforded a chance to look at the literature and think about the framework around the data that had evolved from the process. Concurrently, the stepping out allowed me to arrive at a framework to address the next cycle, taking the shape of the analytical framework. The analytical framework therefore was a product of my experience of working within the wider network. This dynamic and fluid process of meaning making is lost in the traditional reporting format. This argument finds support in the work of Davis (2007) who contends that the traditional format should not be

accepted as a universal format. Additionally, Julia Davis, in citing Richardson & St. Pierre (2005), states that the traditional mode of writing discourages academic researchers from writing until they know what they would like to say, and that such an approach ignores writing as a dynamic and creative process.

The arguments presented thus far suggest that the process of meaning making within an action research setting is not a straightforward affair. A pre-loaded literature review does not necessarily equip one to relate the story as a lived experience or to paint a true picture of how things evolved. I suggest that such a cyclical approach to the literature be seen as an extension of the action research cyclical process that only brings responsiveness to how things were understood. This was relived in each of the cycles reported, and in the reflective planning stages and the analysis that ensued.

In the end, this alternative format afforded me a chance to explore a reporting format that followed the research design of the action research cycles with the literature review emerging within the reflective writing process. This dynamic process demonstrated the inter-relationships between the development of the academic voice and the relationship that existed between the overarching research process of planning, acting, and reflecting, and how these processes in themselves were meta-processes for integrating the literature and analytical frameworks.

1.4 Thesis structure

The chapters follow the order of the action research cycles because, as stated in the previous section, I wanted to present the research as a lived experience in its natural online social networking setting. Before I report on this learning design exploration, I provide a short overview of how the thesis is structured.

The study begins with Chapter 1, where I portray my personal background in which the research is situated, and briefly describe the CEN research context. More so, this personal background provides the basis for understanding my values and philosophical dispositions on learning. Chapter 2, is a foundational literature review that explains the theories and key concepts that inform the research. The chapter represents a starting point for the literature review and reflection as a recurring

feature of the thesis - where I focus on the underlying themes that support the other areas in the research. Chapter 3 introduces the methodological approach used in the research. In this chapter, I use the metaphors of theoretical thread and action thread to represent the connected nature of theory and methodology in the research. Beginning with the focus on the theoretical thread, I provide justification for using action research then proceed to introduce socio-cultural theory as the basis for situating other concepts and theories in the research setting. Chapter 4, an account of the first cycle of the action research, shows how my interest in network-wide CPD activities provided a limited view of the research context. Chapter 5 is a description of cycle 2 where I draw on the Activity-Oriented Design Methods (AODM) (Mwanza 2002) to gain a deeper perspective of the nature of the CEN. The exploration revealed collaborative knowledge-building as the shared object within the network. This revelation supported the need to explore the processes and presences that mediated collaborative knowledge-building in CEN groups. The exploration into the processes and presences in groups is taken up as the research activity in Chapter 7 (cycle 4). I reported the findings from the cycle 2 (Chapter 5) exploration to members of the CEN in a synchronous network-wide session and in Chapter 6, cycle 3, give an account of my work with a group, the CEN Advisory group (CAG), that evolved from this activity. With the CAG, I explored a participatory design approach that resulted in a number of design suggestions. As such, the chapter describes the activities that formed part of this group, but also resulted in the commitment of three members to work together as coders to explore the processes and presences within the CEN group setting. In Chapter 7 (cycle 4), I describe the participatory coding activity of three members of the CAG, and one independent coder. We explored the processes and presences observed in a unit of analysis from the highest participating group in the CEN. The activities in this cycle resulted in the confirmation of processes and presences in the unit of analysis. This exploration was used to theorise the CEN e-mediating framework which comprises four presences: community, moderating, cognitive and 'artefactization'. Each of these presences contains embedded processes which are highlighted in the chapter. Chapter 8 is presented as the final chapter of the thesis where I take a step back and present a reappraisal of the 4 cycles as a way of critically addressing the value, significance and outcome of each cycle. This critical assessment led to the development of an iterative professional development meta-frame as a way to implement the CEN e-mediating framework as part of a professional development collaborative knowledge-building group.

1.5 Conclusion

The intention of this action research is to provide an account from the perspective of researcher and designer. The research is an exploration into developing a design framework in its natural setting through a number of iterative cycles. In addition to describing my personal background, I presented a case for the writing process to mirror the action research cycle - a way of presenting the research narrative as a lived experience. In the next chapter I shall focus on the additional aspects of the background of the research.

2. Chapter 2

An Initial Review

Introduction

This chapter comprises a review of and reflection on the literature by way of introducing a number of ideas that set the stage for the other themes emerging in the research project. I have integrated the literature review and reflection into the thesis at different stages of my formative lived experience as evidence of the process I underwent as learning designer and researcher. I felt that using this approach would provide a truer picture of my development. Whilst the mainstream views introduced in this chapter represent an antithesis to the thinking and approach I advocate, the chapter nevertheless serves as an advance organiser, a means of understanding how ideas and concepts emerged in the research project. In a way, this chapter serves as the context into which the other discussions in the impending chapters are juxtaposed. I begin by reviewing the Caribbean context in which the research project is situated.

2.1 The Caribbean Context

In this chapter, I shall provide an overview of the Caribbean context by briefly describing the historical and geographical dimensions of the present socio-cultural milieu, particularly in relation to the 'peoples' of the Caribbean and the origin of the name. This is followed by a description of the teacher education and professional development context as a way of establishing an argument in favour of the research project. First, a description of the Caribbean:

Knight & Palmer (1989, p.3) define the Caribbean as "islands from the Bahamas to Trinidad, and the continent enclaves of Belize, Guyana, Suriname and French Guiana". The Caribbean is so named because of the Caribs, one of the indigenous groups of people who pre-dated the arrival of Columbus, but did not fare too well after. For by the end of the 15th century there were only three of these groups surviving in the Caribbean: "the Ciboney or Guanahatebey; the Tanio Arawak; and the Carib" (Knight 1990, p.7). Most of the indigenous people had died from European-brought diseases and exploitation, resulting in only a handful of Arawaks and Caribs in existence today.

Geographically speaking, the Caribbean is located in the tropics between 14° N, 75° W and consists of islands and mainland territories which largely sit on the Caribbean plate (Rogonzinski 2000) which is represented in the map below shown as **Figure 2.1**.



Figure 2.1- Map of Caribbean. (Source: CIA world Fact book)

The term 'Caribbean' is used interchangeably with 'West Indies'. The term 'West Indies', however, is more often used to refer to the islands, while the term 'Caribbean' is used interchangeably to mean the wider grouping (Rogonzinski 2000). The West Indies is further broken down into sub-groupings called Antilles - the Greater Antilles to the north, and the Lesser Antilles to the south. Within the Lesser Antilles, there are other sub-groupings - the Leeward Islands and the Windward islands. Though not washed by the Caribbean Sea, Bermuda and the Turks and Caicos Islands are also considered to be a part of the Caribbean. For economic and geopolitical reasons, the Caribbean is often further categorised as an addendum to Latin America and, consequently, is often overshadowed by the interests of the bigger Latin American countries.

The history of the Caribbean is one that does not go down well with many. For some, it is a history of exploitation, conquest and suppression (Williams 1970; Beckles & Shepherd 1991); while for others, Caribbean history has been marred by capitalistic exploitation of people for economic gain (Williams 1970). Although historians present the events from different perspectives, one underlying theme remains constant, i.e., that the Caribbean was a major source of wealth to the so called first

world countries, which exploited the land and its people for its benefit. That legacy of control and domination is seen in Caribbean society up to today. Conversely, according to one school of thought, the history of the Caribbean is of even greater importance because of the strategic role it played in world history, economics and politics (Rubin 1960). The massive and varied cultural contribution of the diverse peoples who came, were forcibly brought, or were sent to the Caribbean has created a relatively high level of integration and diversity among its inhabitants, which has resulted in its complex social structure. Thus, appreciating the effects of the confluence of peoples from varying socio-cultural and ethnic backgrounds in a limited space gives an important insight into Caribbean diversity (Rubin 1960). Consequently, the Caribbean, a heterogeneous society, owes much of its present socio-cultural environment to those first immigrants and the indigenous peoples they met living there before them. From the resulting amalgamation sprang the complexity and challenge that characterise the social, political, educational, and religious aspects of Caribbean life. That complexity and challenge form the context for teacher education to which I shall now turn. My focus will be on the English speaking Caribbean as a matter of convenience, particularly since that is my cultural matrix.

The Teacher Education context

The history of teacher education in the Caribbean began in the work of religious institutions (Knight & Palmer 1989). Miller (1993) cited in Steward & Thomas (1996, p.25), emphasises that "the training of ...teachers began in the Commonwealth Caribbean in the 1830s and was institutionalised by the 1950s". In many Caribbean territories, a special mode of teacher apprenticeship preceded formal institutional training, where "a skilled or qualified teacher instructed the young teacher apprentice both in the material needed for teaching and in the method of delivering it" (Fergus 2003, p.86). This apprenticeship system was guided by what Copley (2000) described as the sage. The sage in traditional societies was seen as someone with more knowledge or wisdom than his peers (Copley 2000), because of which they were able to pass on knowledge to someone in training. Thus, although in-service training is presently considered to be a fairly new way to train teachers, it is this form of training that was first practised. Without any formal training, the trainee teacher or the teacher apprentice relied heavily on the experience in the classroom (Fergus 2003). By 1838, however, teaching methods were influenced by trends taking place elsewhere. Brereton gives an overview of the slowly changing scene:

After about 1865 efforts were made to introduce modern English teaching methods in the schools, and English or Irish textbooks were used. But all the expert reports between 1838 and 1938 agreed that methods were inefficient and old-fashioned and that learning by rote (reciting things parrot fashion) was typical in most schools.

(Brereton 1985, p.45)

It was only after 1957 that work on regional teacher education became a formal matter of concern for Caribbean governments. Before 1957, teacher training institutions existed only in Barbados, Guyana, and Trinidad & Tobago (Steward et al. 1996). At a teacher education conference in 1957, it was agreed that regional governments should adopt policies that would encourage more teachers to be trained. However, it was not until 1980, that "Trinidad and Tobago became the first country to achieve the goal of a fully trained primary school teaching force" (Steward et al. 1996, pp.25-26). **Table 2.1** illustrates the proportion of all teachers in the various Caribbean territories that were trained in 1957:

Table 2.1 - Proportion of trained primary school teachers in 1957

Country	Percentage of teachers trained
Antigua	40
Barbados	25
Dominica	9
Grenada	8
Guyana	17
Jamaica	44
Montserrat	21
St. Kitts & Nevis	20
St. Lucia	6
St. Vincent	6
Trinidad & Tobago	45

Source: Walters (1960) cited in Miller (1993)

Today, with the exception of Anguilla and Montserrat, Caribbean territories provide training for their teachers in their local teacher training colleges. Teachers in Anguilla and Montserrat are trained through an in-service training programme. The emphasis on training is evidenced by the greater percentage of trained teachers from 1984 – 1990 (Steward et al. 1996). The training programmes offered by the

local colleges and in-service programmes are monitored and accredited by the Joint Board of Teacher Education – University of West Indies (UWI). Nonetheless, Guyana and Trinidad & Tobago retained their own internal control of teacher training.

On a different level, teacher education is challenged by the little attention given to continuing professional development at the regional level. This situation is a major concern that points to the relevance of professional development initiatives. Carrington (1993, p.56) states, "One reason for this dilemma is that in many instances the relationship between the teacher training colleges and the school is limited to occasional visits and training practices". The dilemma is compounded by the inadequacies of the programmes for helping educators cope with the changing education landscape. While the Caribbean Community (CARICOM) regional educational policy identified distance education programmes as well as school-based programmes as two approaches that needed to be strengthened in the region, the problem remains a challenge in the Caribbean region. Yet there has been sporadic efforts made by teacher associations and government ministries of education to address professional development needs. This argument is presented in greater detail in the next section.

Professional Development Context

Continuing professional development (CPD) has received attention over the years through a number of studies that stress its role in ensuring that educators gain a number of skills and knowledge in promoting their personal and career development (Guskey & Huberman 1995; Lester 1999; Guskey 2002; Cordingley et al. 2003). Within the Caribbean, government ministries of education and teacher associations also recognize this need and provide training initiatives to educators (Jennings 2001). However, there is a growing discontent with the method of training initiatives offered to educators and this is not restricted to the Caribbean context. Miles (1995), cited in Guskey & Huberman (1995) has written an uncompromising critique of the professional development challenge that is applicable in the Caribbean context:

It's everything that a learning environment shouldn't be: radically under resourced, brief, not sustained, designed for "one size fits all," imposed rather than owned, lacking any intellectual coherence, treated as a special add-on event rather than as a part of a natural process, and trapped in the constraints of the bureaucratic system we have come to call "school." In short, it's pedagogically naïve, a demeaning exercise that often leaves its participants more cynical and no more knowledgeable, skilled, or committed than before. (p. vii)

This “one size fits all” approach suggests that all teachers benefit from or are interested in the training initiatives recommended. Teachers in the Caribbean are part of a learning community that is as diverse as the students they teach. While an awareness of the implications of the need for diversity for teacher training is reflected in initial teacher education (Avalos 2000), it still remains an area that needs to be addressed by CPD in the Caribbean. The need to resolve these issues is attested to by the top-down, sporadic approach to professional development that seems to be a central practice in most Caribbean territories. Fortunately, the need for a more productive approach to professional development has not gone unnoticed (Eaton & Carbone 2008), for it has been an area of concern of (Adams 2005; Steward & Thomas 1996) who maintain that CPD ideally results when teachers who are part of a community are personally motivated to take part in that community. For this reason it is important to address the issues and challenges by capturing teacher input as part of the on-going teacher education process, so as to make that process more responsive to their needs. Additionally, intermittent events of professional development conducted by various concerned organisations and governments, though beneficial, leave many needs unmet, and provide little or no continuing support to teachers after the sessions have been completed. These sessions also tend to be centred on particular policies which, at the selected time, may not be a need of most educators (Miller 1999). In addition, although studies in mainstream teacher professional development have examined the role of teacher collaboration and ICT in CPD (Leach & Moon 2000; Loveless et al. 2001; Anderson & Henderson 2004; Armstrong & Curran 2006; Avril Loveless et al. 2006; Weert 2006), there has not been adequate evidence of the use of online tools in advancing community-based teacher interactions in the Caribbean. This is in spite of the call, by governments and teachers alike, for an increased use of open and distance methods (Robinson & Latchem 2003; Danaher & Abdurrahman 2010). The exponents of these trends seem varied, but there are logical reasons for this, some of which include

the demand for more continuing education for teachers in a changing world, the shift of attention from quantity to quality by policy makers and planners, the introduction of new teacher education standards as countries progress, the new opportunities afforded by ICT, a search for improved training approaches and the impact of finding new ways of using scarce resources.

(Robinson & Latchem 2003, p.1)

Despite the call for finding new ways of facilitating CPD, there seems to be very little momentum in the development of a Caribbean regional initiative to serve the needs

of educators. The work of Lieberman (1996) in online teacher professional development settings also extols the benefits of utilising online networks to enable educators to build professional links and improve their practice. Similarly, the works of (Marx et al. 1998; McConnell 2000; Watson 2001; Brown & Bimrose 2002; Fisher 2003; Parrott & Riding 2003) promote the use of an online, networked distributed approach to professional development that paves the way forward for professional development in the Caribbean. The Caribbean Educators Network attempts to close the gap and the research is reported in this thesis. Moreover the network seeks to promote an online collaborative knowledge-building and sharing² network that can fit within a wider regional CPD structure in the Caribbean region. Likewise, it is my hope that this study will motivate regional educators to push for the establishment of a regional body with responsibility for programmes that meet the continuing education needs of Caribbean educators. Given the diverse socio-economic nature of the Caribbean, an online approach is even more essential for sustaining the professional development of teachers in the region. I therefore propose a collaborative, informal online framework to allow educators to build and share knowledge in a social networking setting. This is the focus in the following section.

The collaborative & informal learning context

In this section I argue for the need for a collaborative informal online learning framework that is aligned to the Caribbean context. It is not my intention to focus on aspects of e-learning, as it is well established that e-learning has varying affordances for learners - for example, see (Downes 2005; Conole & Oliver 2006; Mason & Rennie 2008). Nevertheless, I build on the assumption that learning in an online social networking context provides certain types of affordances to individuals and in this instance, the centre of attention is the collaborative and informal nature of that learning. I begin by defining the notion of knowledge as it is used in the research setting.

² Knowledge-building is used throughout the thesis to mean the broader practice and processes that enable knowledge-building, knowledge-sharing and knowledge-management to occur in an online social networking setting.

Knowledge

There is much discussion in the literature about what constitutes knowledge. In this section I briefly describe what I mean by the term in this research setting. There are three common understandings of the term in the literature: The first is that knowledge is 'justified true belief' (Gettier 1963; Lehrer & Paxson 1969). Thus, in order to have knowledge of a concept or something it must be believed to be true and must be justified. This position assumes that knowledge can be separated from the minds of individuals, and be categorised and codified. In this case, an approach that entails the transferring of knowledge objects is emphasised (Shannon & Weaver 1949; McLure Wasko & Faraj 2000; Hansen et al. 2005). The second understanding is that knowledge, defined as embedded in individuals as what is known, can exist only in the human mind (Polanyi 1958). In harmony with this position, knowledge sharing would be recognised as the exchange of information that takes on an information processing approach to e-learning. The third understanding assumes that knowledge is a socially embedded process, where learning is seen as a process of social interaction and mediation between individuals and tools within a community (Vygotsky 1964; Lave & Wenger 1991; Engeström 1999; Wenger 2003). This understanding of knowledge forms the basis on which this research is positioned. In the next section, I explore collaborative knowledge-building, and then move on by looking into the way in which informal learning is linked to collaborative knowledge-building in the social networking setting.

Collaborative knowledge-building

Collaboration is described as a process of working with others with a similar goal. Holding similar views, Roschelle & Teasley, define collaboration as "a coordinated, synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a problem" (Roschelle & Teasley 1995, p.70). This type of working together implies that there are other processes at play which deserve some attention. Although the latter definition limits collaboration to synchronous activity, it recognises collaboration as a process of organised effort that requires negotiation of joint activity. I would suggest that this joint activity can be referred to as the participation required to make collaboration possible. Rogoff describes participation as

...engagement in some aspect of the meaning of shared endeavours, but not necessarily in symmetrical or even joint action. A person who is actively observing and following the decisions made by another is participating whether

or not he or she contributes directly to the decisions as they are made. A child who is working alone on a report is participating in a cultural activity with guidance involving interactions with the teacher, classmates, family members, librarian, authors, and the publishing industry, which help the child set the assignment and determine the materials and approach to be used.

(Rogoff 1995, p.147)

But how does participation evolve into collaborative knowledge building within the online setting? This is an important question that needs addressing since there might be an inclination to accept interaction or participation in a social network as tantamount to collaborative knowledge-building. For Dillenbourg, collaborative learning is seen as

a situation in which particular forms of interaction among people are expected to occur, which would trigger learning mechanisms, but there is no guarantee that the expected interactions will actually occur. Hence, a general concern is to develop ways to increase the probability that some types of interaction occur.

(Dillenbourg 1999, p.5)

Thus, collaborative learning in online social networking settings focuses on increasing the probability for interaction as a participative social activity that is open to individuals of similar interests. However, collaboration in such online settings requires more than just interaction. Computer mediated communication or dialogue forms part of this participative setting where meaning is co-constructed collaboratively. Therefore, understanding this interaction forms the basis for making sense in context (Henri 1992; Gunawardena et al. 1998; Schellens & Valcke 2005; Sewell 2007; Hull & Saxon 2009). It follows, then, that within collaborative knowledge-building environments, critical discourse is valued and encouraged (Garrison 1997). Active critical discourse or dialogue forms a Vygotskian approach to meaning-making in groups, and is supported in the works of Freire (2000) and Wells (1999). Therefore, after taking into account these processes, I put forward the view that

participation + critical dialogue + critical reflection = the potential collaborative knowledge-building

Critical dialogue requires participation, and it is through discussion within collaborative knowledge-building settings that co-construction and group meaning-making is established. Likewise, critical reflection is linked with the critical dialogue that emanates from participating in the collaborative activity, and provides a basis for evaluating action or inquiry within the situated setting. Consequently, in

order to understand collaborative knowledge-building in the research setting. I focus on the reflective or meta-cognitive statements within the discussions in online settings. As such, the critical reflection, although performed independently, provided a stimulus to group reflection. Rose (1992) recognised the importance of collaboration in reflection as complementary processes within a collaborative knowledge-building setting. As a result, critical reflection in social networking settings cannot be abstracted from participation, and is part of the informal collaborative knowledge-building process. Mezirow (1985), in explaining the transformative educational influence of dialogue, stresses that dialogue allows individuals to critically reflect openly in situations where others are receptive to alternative perspectives and are in a position to challenge, refute, and question others about their views. Thus, the open evaluative or meta-cognitive statements that others can accept or refute openly are a demonstration of the occurrence of reflection (Mezirow 1985) and this is particularly fitting within the online social networking setting. This is evident in the manner in which individuals reflect on news items presented online where they openly comment on the news reporter's perspective. Hence, collaborative knowledge-building is presented as a combination of processes of participation, critical dialogue and reflection that is typical of informal online social networking settings. On a broader scale, knowledge-building is seen as

a collaborative effort directed toward developing some mediated artefacts, broadly defined as including knowledge, ideas, practices, and material or conceptual artefacts. The interaction among different forms of knowledge or between knowledge and other activities is emphasized as a requirement for this kind of innovativeness in learning and knowledge creation.

(Paavola et al. 2004, pp.569-560)

Collaborative knowledge-building, therefore, is a complex process that is supported by the use of mediated artefacts within a particular cultural setting.

Online social networks also present diverse informal cultural settings where collaborative knowledge-building occurs. Johnson (2001) and Newman et al. (1997) proffer useful overviews of the benefits and challenges of online collaboration. However, collaborative online communities are varied in their object and challenges. Within this research setting, knowledge-building assumes that there are personal values and knowledge that new comers bring to the community or group, and this personal knowledge addresses the desire to share or try out their ideas with others. This notion of collaboration, in which personal values and knowledge are considered evokes the view of group cognition (Stahl 2005; Stahl 2006) as a way of

understanding collaborative knowledge-building in online settings. Group cognition can equally be seen as a situated learning theory, for the most part because it stresses the need for individuals to work collaboratively in small online group settings. The concept of group cognition leans on aspects of social learning theory and situated learning to establish a model of social learning that takes a socio-cultural view of learning as constituting multiple phases within a cycle of personal and social knowledge-building (Stahl 2000). In extending the original conceptualisation of group cognition, Stahl (2005) introduced the concept as the complex arrangement of technological and social artefacts needed to achieve collaborative knowledge-building within an online setting. Therefore, group cognition is a deliberate attempt at stressing and questioning the complexities of knowledge-building in online settings. I will explore group cognition in more depth in Chapter 5. In the next section, I focus on informal learning since it is difficult to address knowledge-building in the research setting without an understanding of the informality that it suggests.

Informal Learning

The idea of collaborative knowledge-building in online social networking settings suggests alternative ways of looking at the formal, non-formal and informal divide, particularly since there seems to be an uncertainty about the meaning of the terms in the literature. Formal learning is recognised as a “highly institutionalized, chronologically graded and hierarchically structured ‘education system’, spanning lower primary school and the upper reaches of the university” (Coombs & Ahmed 1974, p.8). Non-formal education, in contrast to formal education, is seen as learning that takes place outside institutional settings. Eraut (2000, p.115), however, extends the non-formal learning conceptualisation as “a typology...which incorporates implicit learning that gives rise to tacit knowledge, as well as reactive learning which is near-spontaneous and unplanned, and deliberative learning for which time is set aside.” In contrast to formal and non-formal learning, informal learning is described as, “any activity involving the pursuit of understanding, knowledge or skill which occurs without the presence of externally imposed curricular criteria” (Livingstone 2001, p.4). Selwyn (2007, p.2), however, argues that “there is emerging consensus that the nature of informal learning is more specific than simply being any learning outside of formal education”. This point of view indicates the need to focus on descriptions that recognise intentionality, agency and context as important aspects of informal learning that typify

collaborative knowledge-building within online social networking settings. Hart's (2009) conceptualisation of learning within social networking settings is one such example that is useful in focusing less on the broad categorisation of informal and formal learning, and more on managing learning that factors in intentionality, context and agency. The conceptualisation is represented as five categories of learning:

1. **IOL - Intra-Organisational Learning** - how social media tools can be used to keep employees up to date and up to speed on strategic and other internal initiatives.
2. **FSL - Formal Structured Learning** - how educators (teachers, trainers, learning designers) as well as students can use social media in education and training as, for example, in courses, classes, and workshops.
3. **GDL - Group Directed Learning** - how groups of individuals-teams, projects, study groups etc - can use social media to work and learn together (a "group" can be just two people, so coaching and mentoring fall into this category),
4. **PDL - Personal Directed Learning** - how individuals can use social media for their own (self-directed) personal or professional learning
5. **ASL - Accidental & Serendipitous Learning** - how individuals, by using social media, can learn without consciously realising it (aka incidental or random learning)

(Hart 2009).

Although focusing on social media, this conceptualisation equally applies to social networking. The concept seems helpful in explaining collaborative knowledge-building in online social networking settings, particularly since it offers a description of learning in the individual as well as wider group and organisational settings. Accordingly, agency, context and intentionality form part of this description. Jarcho (2009), building on Hart's framework, proposed an interpretation of self-directed learning which juxtaposes intentionality in both the individual group and organisational contexts. Jarcho draws attention to self-directed learning in the matrix (see **Figure 2.2**) where the personal-directed, group-directed and intra-organisational learning are seen as requiring a lot of self-directed learning.

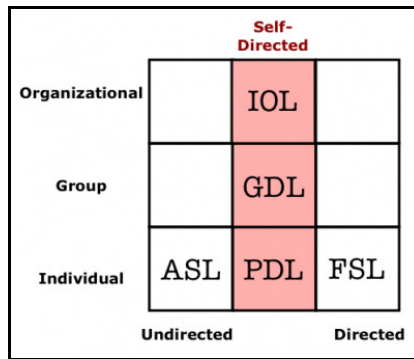


Figure 2.2 – Self-directed learning matrix (Jarche 2009)

Consistent with this view is my use of the term ‘informal learning’, to mean the collaborative knowledge-building in social networking that fits within the frame presented by Hart (2009) and Jarche (2009). Unpacking Jarche’s (2009) conceptualisation further allows me to focus on the personal-directed, group-directed and formal-structured learning categories as a useful visualisation of learning that occurs on different planes of interaction within the research setting. The usage and application of this conceptualisation are particularly useful in understanding knowledge-building in the group-directed setting which mirrors the learning in groups in the research setting.

2.2 The Theoretical context

In this section I present socio-cultural theory as an overarching theoretical frame in which the ideas, themes, concepts and other theories in this research project are operationalised. It is not my intention to elaborate on all claims and assumptions of the theory as such. Instead, I am using the theory as a foundation for presenting the issues and ideas which are interwoven in the thesis. I chose socio-cultural theory as the theoretical framework because it not only provided a basis for understanding social mediation as an activity within the CEN, but it also addressed the notion of tools and processes as mediating artefacts in the research context. I begin by providing a synopsis of the theory, with the hope of sketching a background for the assumptions that underpin the theoretical positions.

An overview of Socio-cultural theory

Socio-cultural theory originated from the work by Lev Vygotsky who advocated that learning is not something that takes place in the mind; rather, human learning is an active social construct, mediated through interaction with psychological and physical tools within social, cultural and historical settings (Vygotsky 1978). Vygotsky's conceptualisation of learning contrasted with the mind-body dualist view of learning of his time (Bakhurst 2007), in that his theory argued for mediation through social interaction with artefacts as the basis of explaining human learning (Daniels et al. 2007). Thus socio-cultural theory promotes a formative, socio-cultural process that advances the use of artefacts or tools to mediate learning in varying social contexts. As such, social interaction or social mediation underpins the socio-cultural approach to learning and, to this end, stresses the inherent interdependent and complex nature of humans. An additional interesting approach of socio-cultural theory is that it cross-examines learning at the micro and macro levels by looking at development in its social, cultural, historical and institutional contexts (Wertsch et al. 1995; Cole 1996). This approach makes socio-cultural theory useful in understanding meaningful interactions that form part of social learning and development in various contexts. The theory has been advanced by others to conceptualise varying notions of learning in specific contexts. For example, it has been used in the context of scaffolding (Wood et al. 1976); situated learning (Lave & Wenger 1991); communities of practice (Wenger 1999) and group cognition (Stahl 2005; Stahl 2006). Against this background, socio-cultural theory was helpful in juxtaposing other theories that seemed to share common interests and themes that emanated from the research study. Socio-cultural theory provided an appropriate frame to draw on activity theory (Leont'ev 1978; Engeström 1987), situated learning (Lave & Wenger 1991), group cognition (Stahl 2005; Stahl 2006) and connectivism (Siemens 2005). These theoretical positions stress social connectedness, and the tendency of individuals to depend on tools and processes to mediate their learning. On a different level, the application of a socio-cultural approach in understanding the nature and design for learning and development in communities has gained some prominence in some studies (Rogoff 1990; Cobb & Bowers 1999; Wells 1999). Additionally, studies of how individuals share knowledge in online settings (Kanuka & Anderson 1998; Sharratt & Usoro 2003; Conceição et al. 2008) provided further support to the social nature of design for learning within online communities. This research project, therefore, drew on socio-cultural theory in exploring collaborative knowledge-building in an informal online social networking setting. The

socio-cultural approach assumes that human thinking and learning cannot be separated from their context (Wertsch 1993), and serves as a good lens to investigate the social, historical and cultural interaction within the research context. It follows, therefore, that in order to understand the human mind, researchers should examine the context in which the human mind is situated, specifically since the individual and environment mutually shape each other (Daniels et al. 2007), though this shaping process is not an automatic, passive process. On the contrary, individuals "actively determine their own behaviour through the creation of stimuli of a specific nature" (Van der Veer 2007, p.28). Vygotsky contended that humans (subjects) make use of physical and symbolic tools (language, writing) through the process of internalization, and he later proposed the notion of zone of proximal development to explain the difference between what individuals can do without assistance (Vygotsky 1978). The idea of assistance by others is supported by the work of Bruner (1985, p.32) who posits, "There is no way, none, in which a human being could possibly master that world without the aid and assistance of others for, in fact, that world is others". More specifically, internalisation involves mental activity that is goal-directed, and which can go on to influence the transformation of the individual (Daniels et al. 2007). Wertsch (1988) refers to this process as the 'social transformation of the mind' as a way of understanding human learning and interaction within communities. Interestingly, human dialogue and language become a basic way of recognising this transformation. From this perspective, thinking is seen as something that "is always dialogic, connected to another, either directly as in some communicative action or indirectly via some form of semiotic mediation: signs and or tools appropriated from the socio-cultural context" (Duffy & Cunningham 1996, p.177). This perspective validates the focus on dialogic inquiry (Wells 1999) and conversational framework (Laurillard 2000) as useful tools in recognising and understanding this transformation. Socio-cultural theory was therefore a sensible theoretical approach to use in framing my research, principally because the research context was marred by complexity of subject-tool interactions and relationships. As I was building on the socio-cultural approach, activity theory offered me a way of understanding this complexity. In the next session, I introduce activity theory and explain how I applied it in my research project.

Activity Theory

Activity theory is widely accepted as being influenced by the cultural-historical psychology theory developed by Lev Vygotsky, who advanced the notion of

mediation through tools (mediating artefacts) represented by the basic subject-tool-object representation (see **Figure 2.3**).

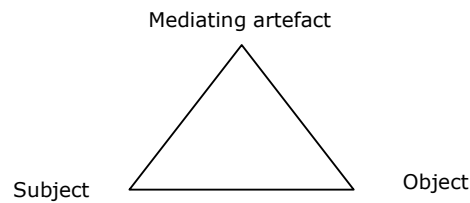


Figure 2.3 - Basic subject-tool-object mediation

However, it was Leont'ev's (1978) contribution of the notion of 'activity' that advanced the application of the collective activity system to account for both individual and collective activity. In this contribution the activity is seen as the "complete system of human practices, that is, purpose-driven activities, explicit and inexplicit methods for carrying out activities, physical and conceptual tools used as mediators when executing activities" (Mwanza & Engeström 2005, p.457). To explain this process, Leont'ev presented a hierarchy of activity which demonstrates the purpose-driven activities (Nardi 1996). At the lowest level of the hierarchy was operation, which was influenced by the condition. This is followed by action influenced by goal, and activity influenced by motive. **Figure 2.4** illustrates the hierarchy structure of activity.

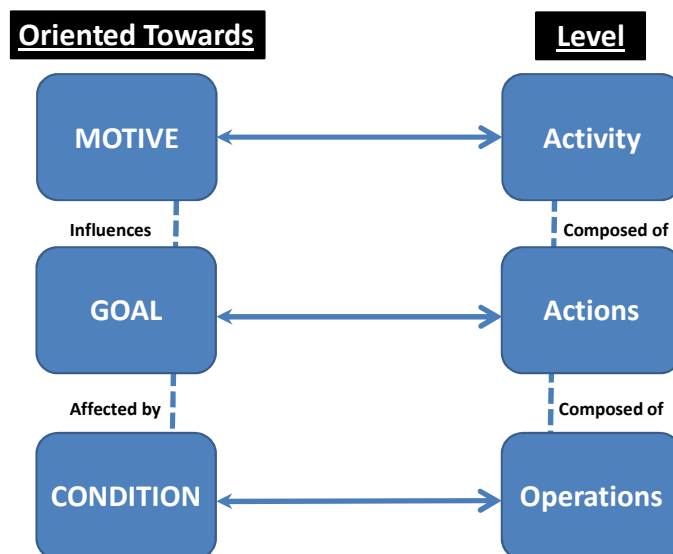


Figure 2.4 - Leontev's level of activities
Adapted from Leont'ev (1978); Nardi (1996)

However, building on the contributions of Vygotsky and Leont'ev, Engeström (1987) expanded the triangle to include both the "collective and collaborative nature of human activity" (Mwanza 2002, p.62) to include what he calls the activity system (see **Figure 2.5**). Thus, for Engeström, activity systems are collectively object-oriented and culturally mediated human activity in structure (Engeström & Miettinen 1999). Engeström argues that individual activity is embedded within a larger social activity and, as such, should be viewed as integral to the activity system. His contribution of rules and community as part of the activity system is a demonstration of this view. Engeström's Scandinavian version of activity theory therefore proposed the subject-community-object relation, in contrast to Leont'ev's subject-tool-object relation. Leont'ev saw tools as mediators of the subject-object activity. Contrastingly, Engeström argued for a more dynamic process of mediation in community where rules and division of labour serve as mediators of the subject-community-object activity (Engeström 1987). The components of the activity system-subject, object, community, tools, division of labour, and rules are highlighted in **Figure 2.5** below:

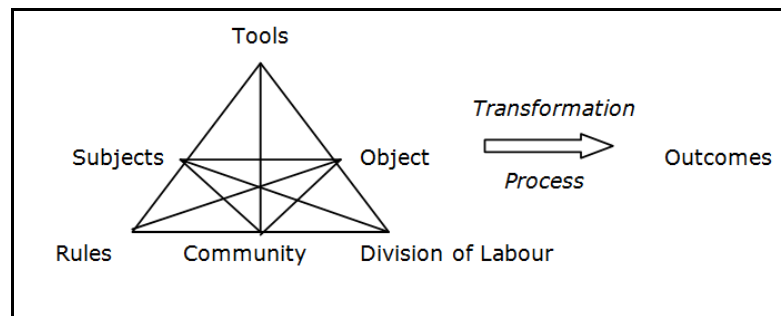


Figure 2.5 – The Activity System (Engeström 1987)

Engeström (1987) describes the components in the activity system as follows:

1. Subjects are seen as individual and collective representations of the human activity in the activity system. The individual and collective human activity is mediated by tools, division of labour, rules and community to meet the desired outcome.
2. The object is the driving force (motive) in the activity system. It provides the purpose or problem space in which actions are executed, and forms the basis of observable actions and activities within an activity system.

3. Tools represent the artefacts that mediate human activity within an activity system. Tools include both physical (tangible) and psychological (abstract e.g. language) resources.
4. Community represents the collective aspect of human activity in the activity system. This is recognised by groups in the wider socio-cultural context of the activity system.
5. Rules are recognised as the norms, values and regulations that are bounded by the particular socio-cultural context of the activity system. These can be both explicit and implicit.
6. Division of labour represents the roles, responsibilities and stratification that individuals form part of, or assume in carrying out their activities within the activity system. Division of labour also addresses the notion of status and power which forms part of the dynamism within the activity system.

Another important feature of Engeström's conceptualisation of activity theory is the focus on contradictions and tensions as important aspects of change. He builds on the notion of contradictions as formulated by Ilyenkov (1977), by ascribing it as an activity theory principle that stimulates development in activity systems. More importantly, though, Engeström argues that "contradictions are not the same as problems or conflicts [but]...are historically accumulating structural tensions within and between activity systems" (Engeström 2001, p.137). Activity theory, therefore, offers an ideal conceptual framework and analytical tool for developing a multi-dimensional understanding of what goes on in communities. As an analytical tool, the theory can be used to arrange an approach to understanding the various aspects of communities, such as the actors (subjects) and their actions as a congruent system; the tools that they use; the object and goals; and the outcome of the impact of these aspects. What is even more interesting about activity theory is that it takes into account the socio-cultural context of communities by looking at factors such as rules, norms and roles that individuals play within communities (Engeström 1999). As a conceptual framework, activity theory sees learning as mediated by tools; and the goal of educators is to provide open-ended descriptive actions and environments that allow individuals to choose the tools that work best for them (Nardi 1996; Wells 1999). This makes activity theory an appropriate fit for contextualising a learning design exploration within the CEN setting. Activity theory as a theoretical framework has been used largely in health care studies (Engeström

1993; Engeström 2000; Engeström 2001b), educational institutions research (Barab & Squire 2004), health services in inter-agency work settings (Warmington et al. 2004) and child development studies (Hedegaard 2009); recently it has also been applied in technologically mediated, distributed communities (Lewis 2003; Ally 2004; Steinkuehler 2004). Its application in the online social networking setting serves as a way of building on the utility of the framework for understanding collaborative knowledge-building in the research setting. My conviction to use activity theory as a methodological and analytical tool was confirmed by the shared view in the literature that the theory was "the best kept secret in academia" (Engeström 1993a, p.63). Activity theory has become increasingly favoured by educators, mainly because it is "a theoretical paradigm that captures complex learning situations...[and] conceptualises individuals and their environment as a holistic unit of analysis (Yamagata-Lynch & Haudenschild 2009, p.508). Unfortunately, others (Nardi 1996; Mwanza 2002) have established that activity theory does not offer convenient methods and techniques for research in all situations and, consequently, applying activity theory in certain contexts becomes a challenge. For example, Barab et al. (2002) contend that the use of activity theory for analysis and design purposes is a complicated matter - a view that deserves even further attention given the nature of design in online social networking settings. However, Mwanza (2002) proposed Activity-Oriented Design Methods (AODM) as a guide to the use of activity theory as a methodological approach to inquiry that assists learning designers in making sense of the context for design. I describe AODM in detail in the methodology chapter (see **section 3.2**) and adopted its approach in cycle 2 (Chapter 5) within the research.

Activity theory is also used to provide analysis of activity systems – as an approach to interpret object-oriented activity within its socio-cultural setting. The approach "is used to map the co-evolutionary interaction between individuals or groups of individuals and the environment, and how they affect one another" (Yamagata-Lynch 2010, p.22). It follows therefore, that activity systems analysis is a deliberate attempt to operationalise the entire activity system when conducting the analysis. Thus, activity systems analysis is inherently complex, and is overshadowed by the interconnected components. Adding to this complexity is the interaction that occurs between different activity systems which are embedded within the larger activity system. Likewise, activity theory, serving as the object of study, can be used to capture the formative, developmental aspect of an activity system, while at the same time serving as a research methodology (Kaptelinin &

Nardi 2006). Adding still more to this complexity is the need at times to analyse activity systems along multiple-planes or levels (Rogoff 1995). I draw on this conceptualisation in presenting a multiple plane analysis at different stages in the action research. This is a novel way of portraying the historical development of the activity systems under study. In the next section I describe the learning theories that are related to social networking.

Learning in social networks

In this section I develop a theoretical perspective of networked learning as a means of understanding collaborative knowledge-building within the CEN. Thus, I introduce the nature of learning in online social networks by drawing on aspects of social, technological and cognitive themes that seem to typify the learning environment. I acknowledge, of course that there are other themes that may explain learning in an online social networking context. The social, technological and cognitive categories are helpful in understanding how collaborative knowledge-building is viewed in the networked learning context. The attention to learning in online social networks or social networking sites (see Downes 2005, for a good historical overview of social networking sites), has shifted the focus from content acquisition to the process of content creation, sharing, and remixing. This shift in focus is predominantly an attitude that enables participation using various technological tools that reposition online learning in a collaborative frame (Downes 2005). But first I begin by defining networked learning.

Defining networked learning

Steeple & Jones (2002, p.2) defined networked learning as "learning in which information and communication technology is used to promote connections: between one learner and other learners, between learners and tutors; between a learning community and its learning resources." Therefore, learning in social networks speaks to social and technological attributes of learning which are associated with a number of theories or frameworks that describe the type of learning that takes place in online social networks. For example, learning in social networks has been linked to network learning theory (Latour 1987), distributed cognition (Salomon 1997) and connectivism (Siemens 2005). While I shall not go into the detail of these theoretical frames, I shall nevertheless draw on various aspects of their ideology to present a case for understanding collaborative

knowledge-building in the social networking context. The references to these theoretical frames are, however, integrated into the social, technological and cognitive aspects of network learning as themes. Deconstructing networked learning along these three themes does not mean that there are no other factors at play. Instead, the themes offer helpful insights into building an argument for collaborative knowledge-building within the CEN. As a result, I shall present these themes and address their implications to the research context, and in so doing, offer a working understanding of how they are used in this research setting. Thus, I visualise network learning along three themes which are considered closely in the following sections, beginning with the social aspects of networking learning.

The social aspect of networked learning

Learning is seen as a social activity that is facilitated through interaction and engagement with tools over time (Vygotsky 1978). Hence, the idea of learning in networks builds on the social interactive nature of learning that stresses the inherent interconnectedness of humans. As a consequence, it further assumes that humans are connected to one another in networks which are socially constructed and maintained. As a result, some see an important aspect of network learning as 'forming and promoting connections' (Siemens 2005; Johnson 2008). At a very basic level, this adheres very closely to what defines a social network where individuals are seen as 'nodes or hubs' connected to one another by a number of social relationships. While social networks formed a basis for understanding human learning before the introduction of online technology, much of its usage and understanding is situated within an online, technological setting. One reason for this grows from the online technological tools which make the connections and relationships between individuals more visible when compared to traditional social networks (Heer & Boyd 2005). Unfortunately, the increasing attention given to technological tools of social networking seems to undermine the other aspects inherent in networked learning. This is particularly interesting, since social networking is seen as a broad spectrum of social and cognitive activities and processes mediated by a number of technological tools and social relationships. Therefore if learning in networks is defined by social connections and relationships, individuals would need to interact in order to build and maintain connections. Accordingly, within an online social network site, social connections can be seen as mediated by the technological tools. To this end, technological tools and social connections represent the fuller potential of social networking sites to afford

network learning. It stands to reason, then, that social connections are not in themselves learning. In the next section, I focus on the technological aspect of this wider network learning perspective.

The technological aspect of networked learning

Technology impacts learning in many ways (Andersen 2007) and, though not limited to networked learning, the impact seems to suggest benefits and uses of technological tools in the online collaborative knowledge-building setting. For that reason it is difficult to abstract technology from the social and other aspects of learning and, because of the difficulty, any attempt to describe the technological aspects of network learning should factor in other aspects of networked learning. Warschauer (2004, p.202), for example, provides support for the social embeddedness of technology in his multiple country empirical research where he proposes that "there is a complex mutually evolving relationship between technology and broader social structures, and the relationship cannot be reduced to a matter of the technology's existing on the outside and exerting an independent force". As a consequence, network learning takes advantage of the social and technological affordances of the internet. Many tools take advantage of the social and technological processes of network learning. These are often referred to as social media or web 2.0 tools. The focus on social media or web 2.0 tools, however, is beyond the scope of this review. Nonetheless, these social media tools are not in themselves isolated from the dominant values or processes that they represent (Mason & Rennie 2008). Illich's (1971) prophetic deschooling agenda hinted at these values in his conceptualisation of what he called 'learning webs' long before the establishment of social networking sites. Illich pushed for a consumer-focused use of technology to support decentralised learning webs that would prevent institutions from monopolising the learning process (Illich 1971). In keeping with this view, learning in online social networks is considered to be decentralised and outside institutional settings, and distinctively informal, complex and difficult to control per se (Weller 2007; Conole 2008). In consequence, while technological tools facilitate collaborative knowledge-building, there are some values which are embedded within, that speak of the cultural situatedness of collaborative knowledge-building in social networks (Rosen 2007; Weller 2007). Social participation, collaboration, openness, 'sharability', 'remixability' and accessibility all represent processes that underscore a deeper set of values that are embedded within the technological tools of network learning. Andersen (2007), building on

O'Reilly (2007), hints at these processes as the 'key idea behind web 2.0 architecture'. Therefore, within the online social networking context, these processes can be recognised as values of networked learning. In consequence, a Vygotskian perspective visualises collaborative knowledge-building in online social networking settings as a culturally embedded activity. This culturally embedded activity is manifest in the way users actively seek out and build knowledge, using various online technological tools which are themselves linked to a set of values and processes that amplify the need to remain connected. George Siemens provides an interesting perspective on being connected in the digital age in his conceptualisation of 'connectivism' as a learning theory for the digital age (Siemens 2005). This conceptualisation is given attention in the following discussion in which the cognitive perspective of network learning is described.

The cognitive aspect of networked learning

While learning is socially constructed through the use of tools (technology), it also involves a process of internalisation (Vygotsky 1978) that supports the cognitive aspects of network learning. Goodyear (2002), for instance, presents an alternative perspective of learning in networks by arguing against all knowledge as being socially constructed, to include an understanding of individual cognition as well as understanding learning with others. So the idea of individual and group cognition gives prominence to networked learning, promoting not only technological and social processes, but also cognitive processes. In line with the previous interpretation, it makes sense to see this cognitive activity as inherently linked to the social and technological contexts. In the following sections I look at cognition from the situated and distributed perspectives. Nevertheless, instead of focusing on the internal individualistic aspect of cognition, I focus on understanding cognition in a holistic or group setting. This preference is based on the premise that it is not possible to observe the internal cognitive processes of individuals. The focus should be on observing human actions within networks as a unified unit of interaction that should not be separated from the wider learning context. Situated, distributed and group models of cognition provide ways of making sense of the cognitive aspect of networked learning. To this end, I present the case of situated learning mediated by distributed links and relationships within the social networking setting.

Situated cognition & learning

Situated cognition draws on a culturally embedded notion of learning, and promotes knowledge as an activity that is constrained by social, cultural and physical contexts (Brown et al. 1989; Hedegaard 1998; Hung & Der-Thanq 2001). Situated cognition therefore transcends the ideal of mind and body dualism and encourages active participation in situ as a way of knowing. While there are some (Brown et al. 1989; Hedegaard 1998; Hung & Der-Thanq 2001) who concentrate on situated cognition, Lave & Wenger (1991) suggest alternatively that learning takes place in a legitimate, peripheral participation framework that leads to a community of practice, and is not something that occurs entirely in the mind. Lave & Wenger (1991) used the term 'situated learning' to describe the kind of learning that happens within a community of practice. The situated approach promotes a Vygotskian perspective of co-construction of knowledge that is a culturally supported activity through interaction of individuals within a common location. The approach suggests that participation is a key element of learning that supports the co-creation of knowledge in group or situated settings. Consequently, situated learning is more a focus on social engagement that provides the environment for learning, and less on the cognitive or conceptual processes of learning (Lave & Wenger 1991). Lave & Wenger (1991) caution against decomposing legitimate peripheral participation, especially as the term is seen as a unified process within a community of practice. However, when analysed independently, the terms offer an insight into their meaning within the communities of practice context.

'Legitimate' speaks to the whole process of belonging, and the notion of power and authority in a learning community. Given this, there are inherent roles, responsibilities and skills that are involved in the process. In its simplest form, legitimation suggests that the acquisition of skills, roles and responsibilities is expected to emerge from continued participation within a community. This is where the concept of peripheral finds some connection with legitimation, for it suggests how members are assimilated into the learning community. Central to legitimation is having a sense of shared and individual identity within communities. Learning for the newcomer therefore is a way of "being in [a] social world not a way of coming to know about it" (Lave & Wenger 1991, p.24).

The second term, 'peripheral', suggests that there is a continuous process of participation that is incremental, leading to what Lave & Wenger (1991) call 'full participation'. First and foremost, the term connotes that newcomers become

old-timers through the mediation process of apprenticeship. Hence, within the situated learning approach, much of this mediation is through the interactive process of assimilating newcomers into the learning environment (Lave & Wenger 1991). In extending the apprenticeship interpretation to a professional development setting, Hargreaves (2000, p.162), stressed the collegial aspect of professional learning:

many teachers are starting to turn more to each other for professional learning, for a sense of direction, and for mutual support. The role of the teacher has expanded to embrace consultation, collaborative planning and other kinds of joint work with colleagues.

For Hargreaves (2000), this new professionalism is a group, rather than an individual endeavour that signals the collaborative element of learning in such settings. Newcomers are expected to participate continuously, if they are to assimilate the new roles, responsibilities and skills they require in order to reach 'full participation'. Hargreaves' (2000) conceptualisation is useful in co-located professional development settings and, when translated to online professional development inquiry group settings, is helpful in understanding group effort and activity as the unit of focus. Yet, the notion of apprenticeship arguably remains a greater challenge to the understanding of the method by which participation is contextualised in the online setting.

This brings us to the implication of participation in communities of practice, an implication which suggests that there is a focus on skills as a result of participating in the process. It means that participation should be on-going - implying a strong connection with peripheral, and also that a number of skills are needed to transform newcomers into old-timers. While this is a focus on skills in-situ, there is the added implication that skills are required to make such participation possible. Examples include skills of negotiation and scaffolding in the process of transforming newcomers to old-timers. The notion of legitimate peripheral participation is helpful in understanding the need for active participation and the need for and reliance on others within a community of practice. However, within an online setting, the approach continues to stretch the boundaries of a community of practice (Palloff & Pratt 1999; Palloff & Pratt 2007). This is particularly interesting when viewed against the background of professional development within informal online social networking settings. Furthermore, the concept of apprenticeship as presented by Lave & Wenger (1991) supposes that there is a reliance on others in professional co-located and inquiry-based contexts which, when applied in informal online

settings, present interesting challenges. A case in point is that the notion of identity formation, coupled with the ambiguity of space and time in online settings, poses questions about learning as a situated process in online communities (Barab & Kling 2004), i.e., a practice can benefit from tools, skills and aspects that lie outside the situated setting. In attempting to address these concerns, Wenger and his associates redefined 'the practice' within the community as "frameworks, ideas, tools, information, styles, language, stories and documents that members share" (Wenger et al. 2002, p.29). This argument provides motivation for addressing learning in network settings as being influenced by distributed artefacts, giving support to the notion of distributed cognition. Against this background, I now explore the literature on distributed cognition as a way of contextualising the sort of sharing and collaborative knowledge-building that is situated in the CEN setting.

Distributed cognitions

The basic premise of distributed cognition is that learning extends beyond the individual to include a shared process of interaction with other individuals and artefacts within their environment (Hollan et al. 2000). This idea of the distributed aspect of cognition is associated with the work of Salomon (1997) and others who advocate that distributed resources within the environment mediate the learning process. This is a dynamic, complex process which demonstrates that learning takes place in a number of ways through collaborative and technological mediated means. Siemens (2005) describes learning in the distributed online setting as something that occurs within networks of human and non-human artefacts where, by using various tools, individuals establish connections with personal networks and communities of practice. This seemingly implies that even though learning is distributed, it takes on situated characteristics for learners, thereby making the individual a central part of this process. For this reason, within a connectivist framework, learning is defined as

a process that occurs within nebulous environments of shifting core elements – not entirely under the control of the individual. Learning (defined as actionable knowledge) can reside outside of ourselves (within an organization or a database), is focused on connecting specialized information sets, and the connections that enable us to learn more are more important than our current state of knowing.

(Siemens 2005, p.5)

Within the connectivist framework, knowledge is promoted as the construction of connections to nodes of information (networks), while “learning consists of the ability to construct and traverse those networks” (Downes 2007). This definition sees learning as a process, and does not seem to cover learning as subject knowledge, and the understanding that results from this process. According to this definition, information and knowledge are seen as distributed within networks, while learning is seen as creating connections. Yet the argument for connectivism does not make clear how individuals actually learn, or how individuals make connections between items of knowledge in the networks, or between the individual and application of the framework to real-world contexts. The knowledgeable other may well be represented by databases of information or other processes and skills needed to connect with others within a networked learning environment. Connectivism discounts the individual for the network (Kerr 2006a; Kerr 2006b), construed as a place where knowledge is constructed - an approach which places more agency on the network. This approach is all the more interesting, seeing that when left unattended, the network is of little use – it becomes out-of-date and attended to by hackers and spammers. The key question about the agency in the knowledge construction process remains, since artefacts in themselves do not have motive; this is an attribute that is given to subjects, because only subjects co-construct the knowledge in the network. Arguably, these perspectives highlight the mysteries of connectivism. If knowledge and information reside in the network, and learning is forming connections, what then occurs in the human brain? What happens to the knowledge and information when individuals form connections? How do we explain the personalised internalisation process? These are some important questions worth addressing. The strength of connectivism is from the definition of learning as something that occurs through interaction between human and non-human artefacts. This meaning is helpful in understanding the inherent connected nature of humans within their learning environment. In trying to provide some further support for conceptualisation, Downes (2007) contrasts connectivism with other theories:

Where connectivism differs from those theories, I would argue, is that...these other theories are 'cognitivist', in the sense that they depict knowledge and learning as being grounded in language and logic. Connectivism is, by contrast, 'connectionist'. Knowledge is, on this theory, literally the set of connections formed by actions and experience. It may consist in part of linguistic structures, but it is not essentially based in linguistic structures, and the properties and constraints of linguistic structures are not the properties and constraints of connectivism.

The statement, "knowledge is, on this theory, literally the set of connections formed by actions and experience," arguable arguably draws some parallels to Socio-cultural theory and, because of this, some scholars discount connectivism as a learning theory that stands on its own. Kop & Hill (2008) for example, portray connectivism as a framework for web-based activity and an epistemological framework for distributed knowledge, but downplay its significance as a learning theory. Kerr (2006) and Verhagen (2006) also argue against connectivism as a new learning theory. Kerr (2006), for example, asserts that the network should not be seen as more important than other factors in the learning process. He posits further, that "networks are important but haven't changed learning so much that we need to throw away all of the established learning theories and replace them with a brand new one" (Kerr 2006a). What Kerr (2006) accentuates, is that the previous works of Vygotsky (1978), and Lave & Wenger (1991) all embraced some of what connectivism alludes to. While I do not entirely concur with some of the arguments levelled against connectivism, I recognize that there is a need to investigate collaboration and learning in groups. These arguments do not suggest that connectivism should be dismissed altogether. As a developing framework that fits within the distributed cognition paradigm, connectivism has provided an insight into how online environments should be designed to allow individuals to easily form connections. In fact, connectivism addresses pedagogical challenges and opportunities for designers that should be taken into account when trying to develop online learning environments. Perhaps then, at this stage connectivism presents itself more as a framework for guiding the design of online learning in networked settings. Further, the notion of learning in groups represents a Vygotskian perspective that remains a useful way of looking at inquiry approaches to learning within networked learning environments. The connectivist arguments also have implications for understanding how individuals make decisions on how connections are established or evaluated, or what actions or activity would constitute a connection. Arguably, individuals must choose, or decide on what connections they make. And this is not something that is dependent entirely on the network. A contrasting view is presented by (Chatti 2008), who argues for learning as a 'knowledge ecological approach', which he calls Learning as a Network (LaaN):

LaaN starts from the individual learner and focuses on her personal knowledge network (PKN) as the unit of analysis. A PKN is comprised of [sic] a myriad of knowledge nodes with complex connections...LaaN views learning as the personal networking of knowledge nodes. In order to learn, we extend our PKN with new explicit/tacit knowledge nodes and when needed we activate the nodes that we believe are able to help us in mastering a learning situation. What we are trying to do all the time is either to pull together explicit knowledge nodes from more than one source, reflect,

detect patterns, remix and assemble it to form a new explicit knowledge asset or to expand our personal social networks with new tacit knowledge nodes by connecting to different social domains to create and share tacit knowledge in a collaborative way, through participation, dialogue, discussion, observation, and imitation.

Chatti's (2008) approach presents a starting point from which to understand the learning process in online distributed settings, since it focuses on established activity (participation, dialogue, discussion, observation and imitation) within an individual's personal knowledge network. Therefore, by focusing on the user activity, we can perhaps understand their distributed cognitions. Unfortunately, the LaaN approach seems more inclined towards establishing a conceptualisation of personal learning networks, and less towards working in groups collaboratively to co-construct knowledge. His approach inspires the search for alternative conceptualisation to explain collaborative knowledge-building in the research setting. A review of the literature has revealed that learning in networks is a complex process that is not restricted to any single theoretical orientation. As such, designing for learning in such settings, "can be nurtured by fostering thinking and reflection, experience and activity, conversation and interaction" (Dyke et al. 2007, p.97). I describe the notion of learning design in further detail in Chapter 4.

Networked learning or community learning

An interesting aspect of networked learning is the label ascribed to the group or activity in which knowledge-building and sharing are promoted. Accordingly, the emphasis on collaborative group effort in shared meaning-making gives rise to the use of a labels that are fitting within the research context. 'Community of learners', 'virtual community', 'online community' and 'community of practice' are examples of labels referenced in the literature. However, I find 'community of online collaborators' (CoC) helpful in articulating the emphasis on collaborative knowledge-building. Here I emphasise that CoC as a collaborative knowledge-building object-oriented activity. This is an important demarcation, as online collaboration can be construed as having varying applications in the online setting. The usage of the term, 'Community of online Collaborators', is not a call for a binary argument about online and offline activities. The term accepts that a significant part of relevant knowledge-building and learning takes place in co-located settings and forms part of the conceptual framework of knowledge-building in online social networking settings. There is also tension in the literature concerning the use of the terms 'network' and 'community' (Jones &

Esnault 2004). Be that as it may, collaboration in online social networking setting cries out for strong ties within situated community settings (Wenger 1999). The emphasis in the present research on collaborative knowledge-building in groups within the CEN is an attempt to answer that cry. Still, groups in social networks do not exist in isolation of the network, and so my approach to inquiry is focused on the wider network (see Chapters 4 and 5) and then on more situated contexts (see Chapters 6 and 7). In contrast, since learning can take place in network and community settings, my focus is not on providing a strong argumentation for network versus community, but on establishing the fact that meaningful dialogue can take place in both situated and distributed settings. Moreover, the CEN is a network of educators who interact and share knowledge in useful ways. Furthermore, it does not appear to mean much to members if they are labelled 'network' or 'community'. More importantly, since communities are seen as "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (Wenger et al. 2002, p.4), it makes sense to identify the groups within the CEN as communities. To this end, I use the term 'network' to refer to the wider CEN, and 'community' to refer to the groups that exist within the network. 'Community of online collaborators' therefore encapsulates this dynamism and movement between the situated and wider setting.

2.3 Conclusion

In this chapter I explored the key theories and concepts underpinning my exploration for collaborative knowledge-building that will form the basis for further discussion at later stages in the thesis. As this is an action research project, I wanted to present these theories and concepts as lived learning experiences, so I have deferred additional argument and discussion for the chapters that follow. This is because I am cognisant that explored action needs to be situated within the particular cycle or chapter in which it emerged.

3. Chapter 3

Weaving the methodological threads

Introduction

In this chapter I describe the methodological approach that guided the inquiry in this research. Methodology in this research is based on the action research domain with a participatory design emphasis and this is discussed in detail in the upcoming sections. This methodological approach is contextualised within an informal online social networking context. Each cycle within this action research utilised a number of methods and approaches in capturing and making sense of the data. This chapter is also an account of a formative design approach within the research setting. The chapter is therefore a focus on both research and design practice. I use the 'weaving thread' metaphor to illustrate the interconnected nature of the themes that form part of the research inquiry. The 'weaving threads' metaphor helps to delineate the chapter into theoretical and action strands and serves as an advance organiser that assists in the understanding of the research. However, the use of the metaphor should not be mistaken as my perceiving theory and action as independent from each other. In fact, the choice of the metaphor represents a deliberate attempt to recognise the important role that theory plays in methodology. I begin the theoretical thread with describing the theoretical base for the action research paradigm and provide the context for action research as the methodological choice of inquiry. The action thread section describes the methods and analytical approaches that formed part of the research study. I shall begin in the next section with the theoretical thread. It starts with a reminder of the context in which the research was set since the "decisions about the location of a particular piece of research within a research paradigm and the selection of methods for research studies can only be made in the light of specific situations" (Clough & Nutbrown 2007, p.18).

3.1 The Theoretical Thread

This section provides a description of the theoretical implications and assumptions in the study.

The Context

The context of the study was introduced earlier in Chapter 1. I now furnish a short overview of the context of the network in which the methodological approach was situated.

The research was situated within the context of the Caribbean Educators Network (CEN), an online social network of educators which was introduced in Chapter 1. In my teaching career I recognised the need for an infrastructure that would offer educators an opportunity to learn and share knowledge in an informal setting. To this end, I was motivated to create the infrastructure and, as designer of the network, to facilitate the development of network-wide professional development synchronous discussions. However, the participation, interaction and asynchronous communication that took place within CEN groups pointed to collaborative knowledge-building as the preferred activity within the network. This discovery led me to shift my focus from the synchronous knowledge-sharing activity to the asynchronous collaborative knowledge-building activity that occurred in groups. Additional observations revealed that most members indicated knowledge-building and sharing and networking as the major reasons for joining the CEN, and this was substantiated by their interaction within various group of interests. Still, collaborative knowledge-building appeared to be ineffectively carried out by most groups, a situation that pointed to the need for the development of a framework to guide and sustain collaborative knowledge-building within the network. It was against this background that, as designer and researcher, I was prompted to explore the nature of the CEN in order to intervene to make informed design decisions. Yet action research was not my natural choice of research methodology. My initial choice would have been an experimental approach that resonated with my instructional design background. Nonetheless, a careful examination of the context and literature paved the way for making action research the methodological choice. I provide further justification for choosing action research later in the next section.

Why action research?

The action research exploration took the form of 4 cycles of planning, acting and reflecting. Each cycle was built on the other in an effort to explore the development of a framework to guide collaborative knowledge-building within the network. This approach meant that any methodological framework that I used had to make provision for (a) the freedom for me to intervene and to explore the response to my intervention so as to effect transformation; (b) the freedom to rely on and work with others in the network; (c) the freedom for me to observe, to reflect on what was going on, to seek advice from members within the network and to act, depending on the outcome of the discussions; and (d) the freedom for me to remain actively and continuously involved in the network in order to gain an in-depth understanding of the context. A careful look at the list pointed me to action research as a natural choice of methodological inquiry.

Justification of a methodological approach speaks to the nature and uniqueness of the research problem. The research question (see **section 3.2**) in the research setting focused on exploring a learning design approach to developing a collaborative knowledge-building framework for the CEN. The exploration therefore was bounded by a context that was community and design focused and it made sense that a value be placed upon my role of designer and researcher, as well as the role of others within the community. It was my opinion that such an approach would be a liberating process that addressed the political agenda of members taking control of their own professional development environment. Central to action research is the idea of bringing about practical change, important innovations or development of social practice (Cohen et al. 2007). Thus, instead of being a follower of a prescriptive framework, I chose to co-construct knowledge and co-design the framework in a reflective, collaborative manner that would bring about change that was responsive to the socio-cultural context. Thus the nature of the research problem justified the use of action research.

My active and embedded roles of designer and researcher had implications for the ways in which I explored the research. Additionally, my role of designer meant that I had to intervene in response to the development of the network. Inevitably, these challenges also had implications for the values that I embodied. This multiplicity of roles and the need for intervention also resonated with the ideals of action research (McNiff 1992; Cunningham 1993; Dickens & Watkins 1999; Herr & Anderson 2005; Stringer 2007).

Action research also provided support for adopting a participatory approach to design by working collaboratively with others to arrive at unified decisions. This was important, since as a designer I wanted the input of others to change things as I went ahead. Consequently, a participatory approach was an ideal choice. More importantly, the participatory approach was congruent with the ideals and values of design in the social networking environment where interaction with humans formed the basis for the primary research and design activity. Using action research was therefore one way of ensuring that the process remained relevant and responsive to the context, seeing that the framework of action research requires people to engage in a process of "inquiring into the nature of a problem to solve by understanding its causes and meanings; getting together by organising themselves as community units; and mobilizing themselves for action by raising awareness of what should be done on moral and political grounds" (Park 2001, p.81).

On a different level, action research provided an acceptable frame with which to draw on analytical traditions that support the use of community and group action as units of analysis. For example, Steeples & Jones (2002) recognise action research as well as activity theory (see Chapter 2) as new perspectives that need further exploration in understanding the conditions that mediate learning in different environments. The use of such approaches provide for a holistic or systemic perspective where members belong to various learning communities and are part of complex relationships in society (Spector 1995).

In addition, an examination of other methodological approaches showed them to be inadequate for my use in the CEN. In contrast, the action research approach afforded me the flexibility of using methods that were responsive to the research context. Hence, in order to thoroughly understand the nature of the CEN, I opted to utilise mixed methods. This approach sought to use methods that provided an extensive, multi-layered understanding of what was transpiring within the network.

It can therefore be seen that action research served as an appropriate methodological framework in which to situate this study. In the ensuing section I portray the theoretical and philosophical context which functioned as a way of understanding the intellectual traditions that influenced the research inquiry, and

then proceed to establish the ideological foundations for the action that followed within the research.

The theoretical and philosophical context

The action research domain operates with a set of different epistemological assumptions from those of traditional science. It is guided by a post-positivist philosophy that promotes the building of knowledge through acting in context, a position which goes against the natural science philosophy (Checkland 1999), and precipitates the argument for an alignment in philosophy. For example, action research has been explored utilising pragmatism (Reason 2003), phenomenology (Carr & Kemmis 1986), existentialism (Feldman 2002), and hermeneutics (Kemmis 1985). This alignment with the qualitative paradigm is built on aspects of social enquiry and action. The present research therefore builds on a qualitative research agenda but is guided by the interpretivist and critical tradition. Such an approach has ontological and epistemological assumptions that spill over into the methodological dimensions of the research.

This research is inherently interpretive in nature, since it strives to understand “socially meaningful action through the observation of people in natural settings in order to arrive at understandings and interpretations of how people create and maintain their social worlds” (Neuman 1997, p.68). However, interpretation in action research does not vocalize a one-sided view of happenings, and this is where the critical element finds prominence. This action research airs the viewpoint of the researcher, the designer and the participant(s), in this way addressing the implications of my multiple roles which were foreshadowed by the need to show how my action as researcher and designer were justified - a point to be taken up later in the chapter. Actions in this research setting assumed that existence and action precede knowledge, and therefore active participation was a precursor to knowledge-building. I must therefore act in context in order to gain understanding to intervene as designer. A basic assumption of action research is that complex social problems and challenges can be best understood by being an integral part of the context, while at the same time intervening to provoke change (Eikeland 2001). Observing and reflecting on the effects of the actions therefore became a basic part of the action research approach, since it was through this process that further understanding and activities were explored. Such flexibility assumed that I embodied certain values and principles which were akin to the established research

practices. Therefore, I declared my values through my personal background (see Chapter 1) in a way that promoted the transparency of the research methodology. This was particularly important considering that I was an established part of the context, and at various times relied on additional sources of observation. Relying on additional sources of observation had implications for the extent to which I valued the viewpoints of others who were part of the research setting. While I valued the interpretation and voices of others in the research process, I was mindful of Frideres' (1992) criticism of the participatory approach in the role of other researchers, and therefore did not recognise participants as co-researchers but as co-designers. Frideres (1992) argued that because most participatory action researchers lacked the skills of traditional researchers, the approach should be downgraded to "participatory action". Undeniably, by this definition, my position could be described as less participatory, and more about relying on others in confirming meaning in the exploration.

A careful review of McTaggart (1997) helped me in deciding to maintain the participatory aspect of my position. McTaggart (1997, p.28) argued that "authentic participation in research means sharing the way the research is conceptualised, practiced and brought to bear on the life-world. It means ownership, that is, responsible agency in the production of knowledge and improvement of practice." This view had implications for how I was going to participate with others in the research setting. Likewise, the participatory focus had implications for how truth was to be seen in the research context. Carspecken's (1996) notion of normative-evaluative truth claims was helpful to me in making sense of what constitutes truth in the research setting. Rather than accepting the idea of multiple realities, Carspecken rightly argues for truth claims that are neither subjective nor objective. It is his view "that others should agree to the rightness, goodness, and appropriateness of certain activities" (Carspecken 1996, p.20). Negotiation and consensus therefore are important aspects of approving normative-evaluative truth claims. The idea of truth claims as bounded by the context resonates with the ideals of socio-cultural theory, which was introduced as the theoretical framework in Chapter 2. Research and design in this context focused on exploring a design approach grounded in participatory and collaborative approaches of knowledge-building within the CEN in order to further the development of the collaborative knowledge-building environment.

The Action Research Domain

In this section I shall describe the action research domain so as to locate the research methodology. I am not setting out to present an extensive perspective of the action research domain, but instead to delineate the trajectory in which the research is situated. I begin to do this by briefly examining how action research is defined in the literature.

Defining Action research

Several definitions of action research are presented in the literature. In a very pragmatic sense, one writer defines action research as a meta-methodology that is cyclic, participative, qualitative and reflective which engages in "action and research outcomes at the same time" and takes a deep inquiry approach to solving issues (Dick 2000). Using a critical-emancipatory framework, Kemmis & McTaggart (1988) define action research as "a form of collective self-reflective inquiry undertaken by participants in social situations in order to improve the rationality and justice of their own social or educational practices, as well as their understanding of these practices and the situations in which these practices are carried out" (Kemmis & McTaggart 1988, p.5). Others like McCutcheon & Jung (1990) see action research as a "systemic inquiry that is collective, collaborative, self-reflective, critical and undertaken by participants in the inquiry" (McCutcheon & Jung 1990, p.148). However, Reason and Bradbury (2001) focusing on a participatory element, define action research as

a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory worldview which we believe is emerging at this historical moment. It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities.

(Reason & Bradbury 2001, p.1)

These definitions reveal variations³ in the action research paradigm, and each stresses different themes and suggests a different interpretation and application. Additionally, the definitions depict action research as a domain where there is a range of activities and levels of involvement that focus on the processes of active

³ Some variations include participatory action research, cooperative inquiry, practitioner research, action learning, action science, emancipator action research, community-based participatory action research, collaborative action research, and educational action research.

participation, planning, learning, reflecting and problem solving. These variations address issues of purpose, value, political and philosophical ideology, and positionality to which each approach owes its context. My task in the next section is to present a brief history of action research in order to track the evolution of some these variations.

A short History of Action Research

A careful review of the literature reveals that there is some uncertainty about the origins of action research. However, Peters & Robinson (1984) trace the origins of contemporary action research to the work of Kurt Lewin. Lewin saw the need to act in response to some social actions (Kemmis & McTaggart 1988; Zuber-Skenitt 1993). Thus, in the mid-1940s Lewin came up with a theory of action research where it was seen as a set of spiral steps of planning, acting and evaluating (Kemmis & McTaggart 1988). Lewin's primary aim was to work towards a model of democratic public inquiry in a way that would allow social problems to be investigated by individuals in society to effect change (Dickens & Watkins 1999). This formation of action as part of research made action research an attractive and acceptable method of inquiry. Use of this approach meant that practitioners "could research their own actions with the intent of making them more effective while at the same time working within and towards theories of social action" (Dickens & Watkins 1999, p.128). This basic approach to research renders the process emancipatory, reflective and responsive to context. What it meant also was that in order to fully make sense and effect change of social practices and problems, researchers had to include practitioners in stages of the research process.

Action research progressed over time through the contribution of a number of individuals. McNiff & Whitehead (2006), for example, report that Corey's (1953) contribution became an influential part of the educational action research movement in America, while in Britain, the work of Stenhouse (1975), ushered in the teacher-as-researcher action research movement in the educational setting. Other academics, such as John Elliott continued to make headway with the use of action research, with particular reference to curriculum reform work in Britain in the 1970s, while Kemmis (1985) is credited with popularising the participatory action research movement in Australia, which has many links to the British movement. However, although action research was promoted in the education setting by both Stenhouse (1975) and Corey (1953), the terminology, 'educational action research', did not become mainstream until Stephen Kemmis and Wilfred Carr made it popular in Australia in the late 1980s (McNiff 1992). Today there are versions of a

self-story approach similar to that promoted by Whitehead (1989) and McNiff & Whitehead (2006).

Thus, while Lewin pioneered a form of social action research, there were others whose notable variations and contributions advanced various forms of action research and, as a consequence, deserve some attention. The following section contains those forms of action research that proffered traditions appropriate to my role as designer, researcher and administrator within the CEN. A more inclusive description of the forms of action research can be found in the work of (Herr & Anderson 2005; McNiff & Whitehead 2006; Cohen et al. 2007).

Forms of Action Research

A review of the literature reveals that there is no single monolithic research method used in action research. It is delineated along varying lines and as a consequence has produced many forms and traditions. Noffke et al. (1997), for example, see action research fitting into three broad categories: the professional, the personal and the political context. Within these three broad categories exist even further demarcations that trace their tradition to particular individuals and interests. As a result, a variety of different classifications of action research has evolved over time. I do not intend to provide a detailed account of the forms of action research. Instead, I intend to focus on the approaches that I built upon in this research. What follows is an examination of the traditional approach of action research, based on the original model of Lewin (1946).

Traditional Action Research (the Lewinian Approach)

In its traditional form, the Lewinian approach stemmed from the work of social psychology after world war in America Kemmis & McTaggart (1988) and was used in a variety of settings. As critically informed action for social improvement, the approach was used for intervening and solving problems in settings adversely affected by the social situation (Kemmis & McTaggart 1988). In this approach, intervention is perceived as an important instrument for encouraging change, even going a step further to the discovery state of traditional science experimentation. Discovery is the goal of the traditional scientific approach, which typically offers no solutions to problems (Cohen et al. 2007). Although traditional action research relied much on some of the basic tenets of scientific experimentation, the underpinning methodology differed because, "unlike traditional science, action

research does not attempt to set tight limits and controls on the experimental situation” (Dickens & Watkins 1999, p.130). Primarily, action research is evaluated by its ability to solve problems or lead to social improvement, while at the same time generating knowledge about the process in the context (Dickens & Watkins 1999). This form of research involves a simple moment of planning, acting and evaluating (see **Figure 3.1**). What I gathered from this process was the need for inclusion of individuals who would both benefit from and contribute to improvement within the network. This consideration led me towards adopting a participatory approach, which is discussed in the subsequent section.

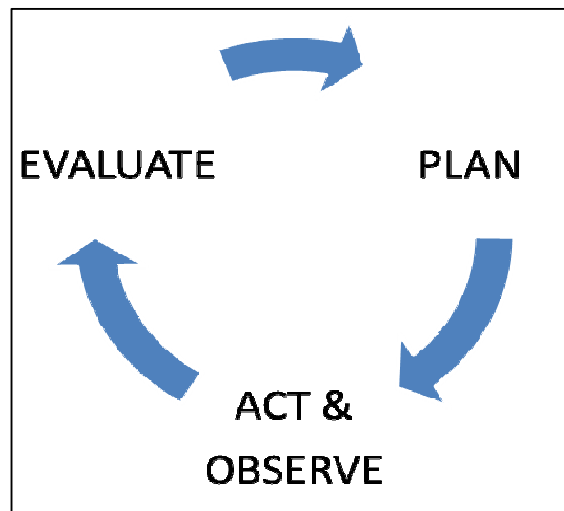


Figure 3.1 – A simple moment in an action research cycle

Participatory Action Research

Participatory action research, which builds on traditional action research, is characterised by the involvement of practitioners as co-researchers and subjects. Participatory action research is based on the Lewinian idea in which “causal inferences about the behaviour of human beings are more likely to be valid and enactable when the human beings in question participate in building and testing them” (Argyris & Schön 1991, p.86). One important element of participatory action research is the transformation of the research and subject roles into a more combined unit, working as co-participants in the meaning-making process. The research activity becomes a social collaborative activity in which reality is contextualised. In this way, participatory action research operates on the assumption that reality is situated (Berger & Luckmann 1966), and cannot be universally applied without understanding the specific context, because the themes,

theories and issues emerge from the setting where the research is conducted. Foth & Axup (2006) for instance, argue for participatory action research as a link that bridges the divide between research and practice while at the same time ensuring that it is “authentic, useful, fair, ethical, and relevant...to real world activity” (Foth & Axup 2006, p.93). Participatory action research methodologies are becoming more popular (Reason & Bradbury 2001), but such popularity does not translate into universality of application and intensity. The process of participation in action research itself remains a rather complex issue to fully explain but, understood in the widest meaning, the approach does not advance for a single way of acting in the context. This entertains acknowledging different strands and levels of participation. As researcher, I did not anticipate that members who participated in this research would interact at the same level of participation as I did. Notwithstanding, participatory action research supplied the foundation for research from a theoretical and practical dimension, as well as a sound base for operationalising my various roles in the research. In light of these considerations, it should not be misconstrued that participatory action research is totally dependent on full participation of everyone within a group or community setting. On a more practical level, “even in a case in which a lone practitioner is studying his or her own practice, participation or at least ongoing feedback should be sought from other stakeholders in the setting or community in order to ensure a democratic outcome and to offer alternative sources of explanations” (Herr & Anderson 2005, p.4). Some action researchers would dismiss this approach as being an antithesis to the action research approach. Kemmis & McTaggart (1988), are among those who insist on having participants take part in every stage of the action research cycles. In my view, the insistence on total participation in participatory action research encourages the need to address approaches that make use of participatory or collaborative elements. Fischer (2009) for one uses the conceptualisation of ‘cultures of participation’ to promote an approach of design collaboration in which participants are provided with equal opportunity to participate and contribute, but this does not necessarily mean that all members participate equally. The underlying assumption in cultures of participation stems from the varying motivation or value for participating in the collaborative activity which provides for different levels or richer levels of participation (Fischer 2009).

The Action Research Cycle Process

Despite the variation in the action research paradigm, (Lewin 1948; Grundy & Kemmis 1982; McLean 1995) all present action research as a set of spiral cycles or steps of planning, acting, observing and evaluating as common and recurring

assumptions of the action research process. In this setting, evaluating is analogous to reflecting, since it requires the reflective function at the end of the action research process. Thus action researchers are required "to plan, observe and reflect more carefully, more systematically and more rigorously than one usually does in everyday life" (Kemmis & McTaggart 1988). Lewin (1948); Grundy & Kemmis (1982); Zuber-Skerritt (1992); and McLean (1995) using this spiral framework, posit a four-moment action research model that is described below:

The **plan** is constructed action and... must be forward looking. It must recognise that all social action is to some degree unpredictable and therefore somewhat risky. The general plan must be flexible... [and] help practitioners go beyond present constraints. It should help practitioners to realise a new potential for education action. **Action** ... recognises practice as ideas-in-action – and uses action as a platform for the further development of later action ... plans for action must have a tentative and provisional quality; they must be flexible and open to change in the light of circumstances. **Observation**, functions in documenting the effects of critically informed action... it must be responsive, open-eyed and open-minded. **Reflection** recalls action as it has been recorded in observation but [it is] also active ... it allows reconnaissance, building a more vivid picture of ... what might now be possible, for the group, and for its individual members as actors committed to group goals

(Kemmis & Mc Taggart 1988, pp.11-14).

The four-moment cycle presents the processes that guide the research inquiry. Naturally, some initial fact finding is needed before the initial planning can be done. In some cases the processes are presented as a three-moment cycle of (1) planning, (2) acting & observing and (3) reflecting. While the moments may vary in how the moments are combined in such cases, the important aspect is that in each cycle the planning precedes the acting, while the reflection on the findings comes at the end. Reflection, described by Schön (1983) is used to engender representations from previous knowledge which are used to re-assess problems for further experimentation and analysis. From Schön's perspective, this model of reflection-in-action promotes the notion of research and practice being intricately tied to each other (Schön 1983). Schön's model of reflection-in-action complements the iterative and investigative nature of action research. The result of this reflection is used to inform the planning of the next cycle. **Figure 3.2** is an illustration of a four-moment cycle that has been influenced by the original Lewinian approach.

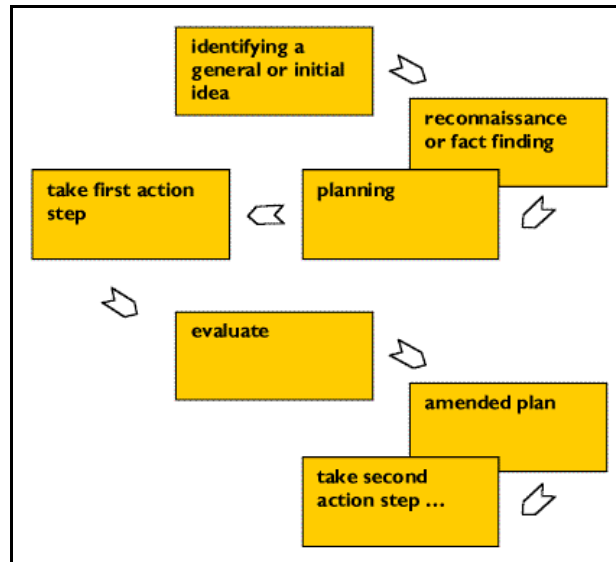


Figure 3.2 - A Four-moment cycle source: (Smith 2009)

As the figure shows, the moments in each cycle constitute an iterative process that is intended to generate deeper insight into a research context which starts with conceptualizing the problem and moves through several interventions and evaluations.

Ethical challenges and concerns

Action research, like other research methodologies, is subject to ethical challenges and concerns. Wellington argues that “ethical concerns should be at the forefront of any research and should continue through to the write-up and dissemination stages” (Wellington 2000, p.3). Inevitably, action research introduces ethical concerns that are not present in traditional research (Nolen & Putten 2007). As a research methodology that takes on research in authentic settings with constant interaction and communication among researcher and participants and among participants themselves, it becomes necessary to address how ethics is to be negotiated. This negotiation would begin at the researcher or personal plane where some degree of introspection and self-evaluation is contextualised (Brydon-Miller 2008; McNiff & Whitehead 2009). Mary Brydon-Miller correctly argues that a primary aspect of ethics in action research is beginning with a critical evaluation of the personal values of the action researcher which allows the articulation of the

multiple roles and identities that the researcher manifests (Brydon-Miller 2008). Thus, values declaration becomes an important part of negotiating the action research process, and that is why in Chapter 1, I presented my personal values by outlining the personal background of the research. However, the ethical concerns of action research are not all about personal values. These concerns are also about the values of others affected by, or participating in the research, and these considerations have implications for the way participants' values are represented in the research. It therefore becomes necessary to factor in and negotiate the ethical concerns from the wider research perspective that corresponds with both the personal and participant planes. On the personal plane, action research seeks to establish that research meet the criteria of the values set out by the researcher (McNiff & Whitehead 2009), while on the participant plane it recognises conventional means of ethical concerns such as privacy, confidentiality, consent to participate, and harm or risk to members. With these considerations in mind, I made careful attempts to ensure that issues of privacy and confidentiality were negotiated in the research setting. I had to take extra precautions particularly since the research was positioned in the online setting which, potentially, is a troublesome issue. This is taken up for discussion in the next section.

Ethics in online research

An important challenge of this research setting was negotiating the ethical concerns in an online social networking setting. This challenge went beyond the mere application of general action research principles in online settings. It also included ways of acknowledging and mapping the dual dimensions of the human and technological aspects of social networks (Foth 2006). This means that ethics in social networking settings is motivated by "Informality, flat hierarchy and the strategic channelling of information [that] enables participants to remain anonymous and to keep their input confidential [by] ...[visible] causal interrelationships" (Foth 2006, p.220). So the call in online settings is to make visible the research intent without compromising the inherent action research principles. Jones (1994) provides helpful recommendations for conducting research in online settings that deal with concerns about the complexities of public and private data and informed consent. I share more of my reflections on the application of these concerns in the wider CEN as well as smaller groups within the CEN later in the section on negotiating the ethics. However, to address these issues I made a deliberate attempt to protect user data by limiting accessibility only to members who had been granted access to the site. CEN members were also informed of the

research intent of the network, i.e. research activity within the network, and its purpose was included as part of the sign-up procedure.

The Action Research Rigour Criteria

Rigour in the traditional sense is often linked with notions of validity and reliability which are recognised as tools used within a positivist epistemology (Winter 2000). Validity, for example, is perceived in different ways: how well the research design answers the research question (Lehner 1998); a way of measuring what we think we are (Kerlinger 1964); "the degree to which the finding is interpreted in a correct way" (Kirk & Miller 1986, p.20); and a way of representing accurately the feature of phenomena as intended (Hammersley 1987). In contrast, reliability is recognised as the "reproducibility of the measurements" (Lehner 1998, p.212); and "the degree to which the findings is independent of accidental circumstances of the research" (Kirk & Miller 1986, p.20).

Likewise, claims of knowledge are debated along the notion of generalisability. The concept of generalisability seems to promote the sentiment of universality, which undermines responsiveness to the local context. Lincoln & Guba (1985), however, posit an alternative concept of 'trustworthiness', against which non-positivist research can be measured. Trustworthiness is interpreted as the ability of the researcher to persuade the reader that the research findings of an inquiry are worthy of his/her attention (Lincoln & Guba 1985). Thus, action research as a methodology requires a responsiveness and relevance to the research process which should be tested against its own criteria (Herr & Anderson 2005), and therefore should not be bounded by positivist prescriptions of generalisability, validity and reliability. Herr & Anderson (2005) put the case for a redefinition of rigour as an alternative measure of quality in the action research paradigm. Rigour in action research is more akin to evaluating knowledge claims against a criterion and its responsiveness to the context (Herr & Anderson 2005).

In my role of researcher I, too, see the process of validity as being responsive and relevant to the particular context being investigated. Accordingly, the question that should be asked is not whether the research can be replicated and applied to other circumstances, but whether it meets the need of the particular research context. For this reason, the works of (Dick 1997; Reason & Bradbury 2001; Herr & Anderson 2005; McNiff & Whitehead 2009) usefully highlight alternative approaches to guide and evaluate the action research process – and rightly so. The idea of relevance is

featured prominently in the work of Dick (1997) in which he challenges the universality of the 'scientific method':

"The scientific method" wasn't developed by using the scientific method. It was a bootstrap operation. It evolved. It evolved to suit particular outcomes in particular environments. I would expect a different environment to select for a different "species" of research, by a different history of evolution

(Dick 1997).

Inevitably, I subscribe to the alternative approaches that Herr and Anderson (2005) suggest for evaluating and guiding action research. These include five criteria for validity, namely, "outcome, process, democratic, catalytic and dialogic" (Herr & Anderson 2005, p.54). These criteria build on the accepted action research traditions that include the following goals: "(a) the generation of new knowledge, (b) the achievement of action-oriented outcomes (c) the education of both researcher and participants (d) results that are relevant to local setting (e) a sound and appropriate research methodology" (Herr & Anderson 2005, p.55). As a result, these traditions contribute to responsiveness to the action research process, and are a recurring theme throughout the present thesis. **Table 3.1** illustrates how I interpreted and applied them in the research setting.

Table 3.1 Adaptation of action research goals and validity

Goals of Action Research	Quality/validity criteria	Research application
The generation of new knowledge	Dialogic and process validity	Creating a framework that fits local context collaboratively; Depending on the critical review from participants and peers
The achievement of action-oriented outcomes	Outcome validity	Development of progressive research questions; Quality of data that results from research action
The education of both researcher and participants	Catalytic validity	Empowering participants through involvement in learning process
Results that are relevant to the local setting	Democratic validity	Meaning-making in collaboration with others; Inter-subjectivity (multiple perspectives accounted for); Collaboration at design and research levels
A sound and appropriate research methodology	Process validity	Constant reframing of problems to lead to meaning-making; Constant problematisation

(Herr & Anderson 2005, p.55)

In a similar vein, Reason & Bradbury (2008) proffer a description of validity that focuses on the 'quality' of the action research process. McNiff & Whitehead (2009)

reference validity claims on two levels: the personal and the social. The first claim is judged against the personal values and standards of the researcher, while the second refers to how well the research methodology and values are articulated to others (McNiff & Whitehead 2009). It follows, then that as the researcher with an inside perspective, I can only make knowledge claims that are associated with my personal values and the socio-cultural context of the research, and these knowledge claims should not be evaluated out of the context in which they were studied. The pursuit of validity should seek truthfulness in personal values as well as the research outcomes in the local setting. Communicating this research as a lived experience was one way in which I was able to address this issue. In the next section, I describe how the ethical dimension was negotiated.

Negotiating the Ethical Challenges

The CEN is a network with members with genuine interests and concerns and, consequently, ethical concerns formed a central part of how the research inquiry is conducted. There were three major aspects that I addressed with regard(s) to negotiating the ethics in this research setting. These included issues of member privacy, access & informed consent and positionality.

Member Privacy

One of the major concerns was whether the network should be a closed or open one. From the inception it was decided that user privacy should be at the forefront, a decision which was to be viewed with seriousness throughout the study. Issues surrounding the use of membership data, member names, statements and comments formed part of an understanding in the development of the network, and much effort was made to ensure that individuals were aware of this during the sign up process. This led to an understanding of access and informed consent.

Access & Informed Consent

As an active participant and researcher within the network, I remained cognisant of the ethical implications of my position and, therefore, exerted much effort and took precautions to avoid any form of ethical compromise. Being a closed network, the CEN required individuals to register and sign on in order to participate in network activities. A number of profile questions were presented to members during the online registration process. The following excerpt, which forms part of the registration process, addresses ethical concerns:

By joining this network you give your consent to use your information as part of the development of the community and for research conducted by members of the network. Please note that this is a closed community. As such your data and information are protected and viewed by members of the network. All attempts will be made to conceal your identity if specific user data is used. Do you understand this statement?

In this way, individuals who are members make themselves available to be part of research and online community development exercise within the CEN. Within the wider network there were many sub-groups, in which I also participated. Some of these groups had open membership, meaning any member of the wider CEN network could join and participate, while others were closed, restricting membership only to those who requested membership. Besides the network-wide consent, I made every effort to inform members of the CAG - the participatory design group, of my research intent. This was a continuous process, which involved reminding members of my research intent before engaging in participatory design and coding activities. Thus the ethical dimension in this research was an on-going process of negotiation in which participants could withdraw their participation if they so desired.

Positionality (Situating my role and values)

Situating my multiple positions within the research setting called for a deliberate reflection on the way each role was embodied, as an approach that served as a way of building on the transparency of the research process. This was particularly important as this research activity was also a form of learning; thus, the roles of researcher and designer were constantly being created and recreated within the research setting. This multiplicity of roles provided for a dynamic way of presenting the research, thus arguably giving rise to "more dynamic, problematic, open-ended, and complex forms of writing and representation" (Lincoln & Guba 2005, p.211). In light of this, I devote this section to carving out the role of researcher and designer that served as a basis for understanding the development along the multiple planes within this research. Naturally, I performed the role of participant-as-researcher, which brought a different set of moral constraints on the way in which I conducted the research. Herr & Anderson (2005) provide very helpful support in the participant and researcher relationship. In their view, when taken in communion, the two-in-one role should result in a deeper understanding of issues and in the acquiring of the perspective of both the participants and researcher, so that action researchers "should expect that their research questions will cut across and introduce the possibilities for change on multiple levels" (Herr & Anderson 2005, p.72). Unsurprisingly, my role within the network and participatory design group

kept changing at different intervals of the research. Since my role changed at different cycles of the research, I made deliberate attempts to draw a clear distinction between the various roles at each stage. This personal, deep, and active involvement provided me with a rich insider perspective that allowed me to render a trustworthy account that was faithful to the research goals and intentions in such a way that I was able to share an informed interpretation and understanding of the CEN. **Figure 3.3** illustrates the multiplicity of my roles within the research process.

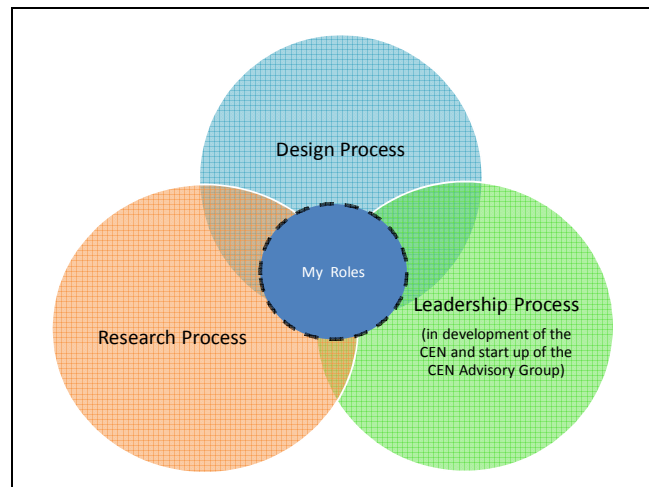


Figure 3.3 – The multiple roles in the research process.

Each of these roles represented particular challenges and opportunities. In cycle one, I took on my role of researcher and led the process of gaining an interpretation of the CEN. This research process was also useful in performing my design and leadership roles within the CEN. Leading this research process afforded me the opportunity to present the findings as part of a reflective workshop where new roles emerged. The participatory design group - the CEN advisory group (CAG), (see Chapter 6), also emerged from this reflective workshop. As researcher with a vested interest in design, I led the advisory group in a participatory design activity as a way of co-constructing and making sense of the design challenge. This was guided by my research interest in design, but the model that developed emanated from the interaction within the CAG.

3.2 The Action Thread

The research design: the methods, the analytical approaches, and the techniques and tools of the action research are portrayed in this section.

The Context

This action thread section of the chapter outlines the methodology-in-action of the research. Each cycle within the action research addresses a particular research question that emerges from the inquiry. Accordingly, I provide accounts of the methods, tools and techniques used to collect data, by addressing the research questions in each cycle. In particular, I pay special attention to activity theory as a tool for assisting in this process. In so doing, I draw on an interpretation of the use of an Activity Oriented Design Methods (AODM) (described later in chapter) as a way to facilitate a deeper understanding of the online collaborative social networking context. Thus, the AODM as used in this research served as a guiding mechanism that refined the research study, while at the same time, it provided a comprehensive framework to capture the relationships, activities and interactions at different cycles within the research. The AODM, therefore, is an appropriate benchmarking tool to operationalise the data collection process and analysis. I also draw on excerpts from my field journal. The process of data collection suggests that there are implications for the way learning design research is contextualised when using tools to assist in the data collection process. I shall pass on now to describe this process in the research design section that follows.

The Research Design

The research is driven as an online action research from the perspective of a designer and researcher. In this section, I am using the term 'research design' to represent the approach used for collecting data, interpreting, analysing, reflecting and reporting the research findings. Thus, drawing on the qualitative approach, I used a number of methods, tools and techniques that helped in my making sense of the process in each cycle of the research. These methods and techniques constituted the moments of planning, acting, observing and reflecting. However, I conceptualised the acting and observing as a combined process which provided the basis for reflecting. Besides serving as a research building process, the output of the observing and reflection formed the basis of my intervention and sense-making process within the research study. As a deliberate attempt to illustrate the historical

development in the research, each cycle is represented as a separate section within specific chapters of the thesis (Chapters 4 to 7). This narrative format contextualises the planning as methodological guidelines and tools; the acting and observing represent an account of the data collection and interpretation, while the reflecting represents a discussion on the themes that emerged from of the previous moment, as well as a review of relevant literature. **Figure 3.4** portrays the iterative process of the research design.

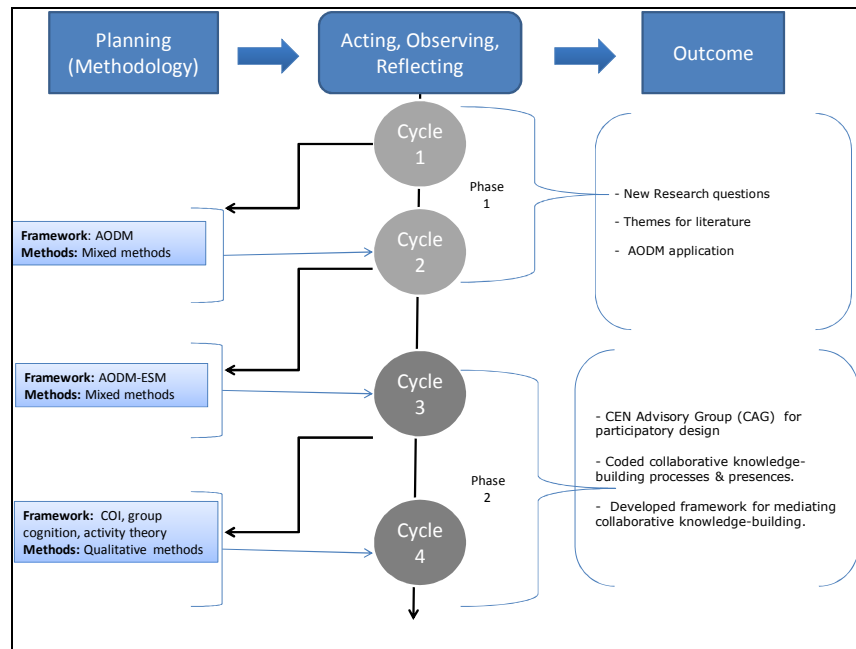


Figure 3.4 - The Research Design of Research

The Cycles: An Overview

Methodology in this research was a complex process. Because each cycle had different challenges, it is important at this stage to provide an overview of the research questions, the data collection techniques and the analytical approaches (see **Table 3.2**) for each of the four cycles. It will be seen that, instead of being wedded to a particular method, the questions that were explored directed the choice of methods. Each cycle used a set of methods to obtain the data, and justified the use of both quantitative and qualitative methods. The use of mixed methods seemed a logical part of the methodology, as this approach provided added perspectives, and a rich set of data to interpret. The **planning** session provides an account of the analytical frame that guided the acting and observing. The **acting** and **observing** stage presents the techniques, methods and approach of collecting and interpreting the data. In the final moment of each cycle, **reflecting** provides a

critical-evaluative moment of reflection-on-action as a way of evidencing the development of the concepts within the research. I used this reflection as an open discussion of the themes that emerged from the acting and observing stages.

The analytical approaches supplied the basis for analysing and interpreting the data that emerged from the network interaction and participation. Participation and interaction in the CEN included a number of activities such as posting and reading comments, uploading resources, suggesting links and requesting to follow a member within the network (friending). Consequently, in this research analysis was a continuous responsive process in which each cycle was built on a different contextual analytical framework that supported a “fitness for purpose” (Cohen et al. 2007, p.461) approach in responding to the research questions that emerged in each cycle. The analytical approaches, like the research questions and methods of data collection, changed and developed in each cycle, evolving into a participatory approach to learning design. My intentions were not to maintain ideological purity, but rather to explore a more pragmatic approach to making sense of all of the data which was emerging from the activities and interaction within the network. This, therefore, was a rather time consuming and complicated, but intuitive process of meaning-making. **Table 3.2** illustrates the development of the analytical constructs used in the research. I now outline the development of that analysis in each cycle as well of the research questions, and the methods of data collection. The detailed application shall be provided later in specific chapters of the thesis. I begin with cycle 1 in the next section.

Cycle 1

In cycle 1 (Chapter 4) I explored two research questions - one question addressed my role as researcher and the other addressed my role as designer: What is the nature of the CPD interests of members of the CEN? And how do I go about designing an online CPD framework for the CEN? These questions led to the use of an online questionnaire (see **Appendix 1**), which solicited membership CPD interests. I also relied on data from Google Analytics and the membership database of the CEN. The data collected, however, was insufficient to draw meaningful conclusion about the CEN membership interests. Despite this shortfall, I was able to generate descriptive statistics of membership demographics and interests, and analyse content from e-mails and field notes that provided the impetus for a further research question for the next cycle. In this cycle I also introduced a multiple plane

activity systems analysis to allow a perspective of the CEN and the learning design activity systems. The use of the multiple plane activity system analysis was described in Chapter 2.

Chap/ Cycle	Ch.4 (Cy.1)	Ch.5 (Cy.2)	Ch.6 (Cy.3)	Ch.7 (Cy.4)
RQs	<p>What is the nature of the CPD interests of members of the CEN?</p> <p>How do I go about designing an online CPD framework for the CEN?</p>	<p>What is the nature of the CEN activity system?</p> <p>How might AODM be used to support an interpretation of the CEN activity system?</p>	<p>What is the nature of the CAG activity system?</p> <p>What is the nature of the participatory design approach in the CAG?</p>	<p>What processes and presences mediate CKB in Diversity of Learning group?</p> <p>How is a participatory design approach applied in making sense collaboratively of a framework to mediate collaborative knowledge-building in the CEN?</p>
Methods	<p>Quantitative methods: Descriptive statistics for showing membership demographics & interest</p> <p>Qualitative methods: Content analysis of e-mail communication, field notes</p>	<p>Quantitative methods: Descriptive statistics of web traffic data; RSS activity feeds; Member demographics</p> <p>Qualitative methods: Content analysis of asynchronous dialogue; Field notes; Synchronous dialogue; Instant Messaging chat log; Member pages</p>	<p>Quantitative methods: Descriptive statistics of participatory design group interaction and postings</p> <p>Qualitative methods: Content analysis of synchronous, asynchronous dialogue; Field notes, member profiles</p>	<p>Qualitative methods: Content analysis of inter-subjective (shared meaning making in group) coding of asynchronous dialogue in a CEN group; literature review of themes</p>
Analytical	<p>Use activity theory to describe multiple plane (CEN, learning design) activity systems</p>	<p>AODM as a descriptive data analytical tool</p> <p>AODM as a tool to capture multivoiced perspective</p> <p>Use activity theory to describe multiple plane (CEN, learning design) activity systems</p>	<p>Eight-Step-Model- AODM tool to capture nature of CAG activity system.</p> <p>Use activity theory to describe multiple plane (CEN, learning design, CAG) activity systems</p>	<p>Use activity theory to describe learning design and Diversity of Learning activity systems</p> <p>Inter-subjective group coding</p> <p>Adapted COI, Henri's CKB, Solomon's e-moderating (2000) to theorise</p>
Tools	<p>Google Analytics, online questionnaire CEN NING database</p>	<p>Google Analytics; Activity theory; Email; CEN database data; Elluminate Live; RSS feeds, SPSS analytical software</p>	<p>SPSS, Atlas.ti, Elluminate Live</p>	<p>Word-processing software, Atlas.ti</p>

Table 3.2 - The Research Design

Cycle 2

In cycle 2 (Chapter 5), I continued to use the multiple plane activity systems analysis where I proffer an interpretation of another instance of the CEN and design activity systems. The research questions are: What is the nature of the CEN activity system? And how might the Activity-Oriented Design Methods (AODM) be used to support an interpretation of the CEN activity system? As a descriptive data analytical tool, the AODM provided a basis to address the research question, as well as the basis of capturing a deeper understanding of the nature of the CEN. I describe the AODM in detail later in this chapter. A number of methods were used to support this approach. These included the use of quantitative approaches: descriptive statistics, web traffic data, RSS activity feeds, member demographics and qualitative approaches: content analysis of transcripts of field notes, chat logs, asynchronous discussions, and member profile pages. A number of tools were used in this cycle. These included SPSS statistical software for generating the descriptive statistics, Google analytics for web traffic data, CEN database for membership demographics, Elluminate Live for capturing dialogue, and RSS for listing network and membership activity. Activity theory was used to inform a multivoiced method for capturing data and also as an analytical frame for describing the CEN and design activity systems. The application of the AODM in cycle 2 pointed to collaborative knowledge-building in groups as the shared object in the CEN and drew attention to the need to focus on the processes (what is done) and presences (the environment or condition) as mediating artefacts of the collaborative knowledge-building process in groups. This, however, required a participatory design approach and stimulated the development of the CEN Advisory Group (CAG). In cycle 3 I explore the nature of the CAG as a way of paving the context for participatory design activity in cycle 4.

Cycle 3

In cycle 3 (Chapter 6), using the Eight-Step-Model (tool from the AODM), I interpreted the CAG activity system. This application was spurred by the research question: What is the nature of the CAG activity system? As in cycles 1 and 2, I continued to use the multiple plane analysis, but this time to reveal the CAG, learning design and CEN activity systems. The design research question (What is the nature of the participatory design approach in the CAG?) motivated the use of an inductive approach to content

analysis (Corbin & Strauss 2008; Creswell 2009) to focus on the dialogic exchanges and interaction that took place in the group. Using the transcript of synchronous dialogue from Elluminate Live discussion imported into Atlas.ti, I coded the transcript for meaning. A detailed account of this inductive approach follows later in this chapter. I also used SPSS to generate descriptive statistics to portray the CAG interactions and postings. I extended the analysis by using activity theory (Leont'ev 1978; Engeström 1987), group cognition (Stahl 2005; Stahl 2006) and community of inquiry (Garrison et al. 2001) theoretical frames as mediating artefacts in theorising a framework for mediating collaborative knowledge-building within the CEN. The analysis in this cycle did not address the research challenge of processes and presences from cycle 2. This was the focus in cycle 4, where four members worked independently to investigate the processes (what is done) and presences (the environment or condition) that mediate collaborative knowledge-building in groups.

Cycle 4

Cycle 4 (Chapter 7) builds on the inductive content analysis approach from cycle 3. This content analysis, however, was built on my version of an inter-subjective (shared meaning making) analytical approach, where the codes of four individuals were used to furnish a combined interpretation of collaborative knowledge-building within a CEN group. As in previous cycles, cycle 4 explores two research questions. The first question (what processes and presences mediate collaborative knowledge-building in the Diversity of Learning group?), served as the background for the group coding activity, in which four individuals using word processing software, coded the same transcript of asynchronous communication from the Diversity of Learning group. The data analysis from cycle 2 revealed that the Diversity of Learning group was the most interactive group, and it was evident that collaborative knowledge-building was taking place in the group. The transcript consisted of 21 message units. I provide description of the message unit as a unit of analysis later in the chapter. As in the previous cycle, I extended the analysis through a moment of critical reflection, using community of inquiry (Garrison et al. 2001), and Henri's (1992) collaborative knowledge-building framework to further the theorisation of the nascent collaborative knowledge-building framework to mediate collaborative knowledge-building in the CEN. In this cycle, I also offered an activity systems analysis of the learning design and the Diversity of Learning group activity systems.

Thus I used activity theory as a methodological and analytical frame at different points of the research, building on the utility of activity theory as a helpful framework for investigating design in online informal collaborative knowledge-building settings. Having shown how the research questions, methods of data collection and analytical frame developed in each cycle, I proceed now to feature the details of the data collection and generation.

Data Collection and Generation: The Methods, Tools and Techniques

In this section I shall supply details of the methods, tools and techniques used in data collection. As stated earlier, each cycle had specific methods for collecting data. I begin with the online questionnaire which was implemented in cycle 1.

Online Questionnaire

The online questionnaire, also referred to as web-based surveys, was used in cycle 1 for exploring the membership interests of members. There are many advantages to using online questionnaires; in fact, the approach has been used in various studies. Particularly, online questionnaires are easy for respondents to complete, and these questionnaires provide an efficient way for researchers to compile automated data that can be easily imported into analytical software (Mann & Stewart 2000). I used Google Docs to create an online questionnaire consisting of open and closed questions (see **Appendix 1**).

Web Traffic Data

In cycles 1 and 2 I used Google Analytics⁴ to collect data on the behaviour and interactions of visitors to the site. Primarily, I wanted to know how visitors interacted with specific network web pages and tools. Google Analytics, one of many web analytical tools available to researchers, offered the means of satisfying this requirement. Web analytics is the process of evaluating websites by analysing web

⁴ Google Analytics a free online tool provided by Google and is available online at <http://www.google.com/analytics>

traffic data, using a number of tools, and making changes to the website based on that data (Cutroni 2007). More specifically, Waisberg & Kaushik (2009) describe web analytics as the process of using data mining techniques by various personnel to produce statistics that help to improve web sites. Therefore, the goal of web analytics is to understand visitor behaviour in order to improve their online experience. The use of web analytical tools in research settings has mixed applications. While I did not use web analysis in the conventional sense of gathering data for commercialising the site, the use of the tool revealed useful user traffic data, which yielded valuable information about length of visit and depth of visit, and the country of visitor. In addition, whilst the use of Google Analytics has been applied in tourism (Plaza 2010), in library management (Hasan et al. 2009), and business e-commerce website research settings (Hasan et al. 2009), in the present research context it is applied as a means of gathering information on visitor behaviour, which in turn exerts influence on design-based decisions. I did not rely heavily on this tool as part of the comprehensive analysis since it did not reveal much about the deeper user interaction in the network. Although web analytic tools are useful for capturing user traffic and usability concerns with specific pages, the tools tend not to give detailed information about specific interactions and concerns within a website (Hasan et al. 2009); hence the resort to other methods, such as the use of membership data from databases.

Membership data

In cycles 1 and 2, I used membership data from the NING CEN database. Provision for the accessibility of data was a corollary of the online setting of this research. Yet, accessibility of such data did not remove the challenge of getting or need to get rid of some of the data. The data within the network forms part of the database structure of the NING social networking platform (see Chapter 1 for a description of NING). This, however, was not without challenge. Despite my being the network designer, the network database and membership information are bound by the company's policies and regulatory culture. Hence, access to this data is restricted at various levels. As a network designer, I had no direct access to the database; only through the administrative interface could I request access to some membership data.

Membership data from the network is stored in a Structured Query Language⁵ (SQL) database. Within the online social networking platform, data related to the membership characteristics are collected and stored in the online database file. As network administrator, I was able to query this online database in order to access the membership data. The queried output, provided in a plain text format, was then imported into the SPSS software for further analysis. The result of this process was a number of descriptive statistics which provided an idea of member demographics.

Asynchronous communication activity

Analysis of asynchronous communication was performed at different intensities in cycles 1-4. The analysis of online asynchronous communication data is an established way of understanding human dialogue in online settings (Henri 1992). In this section I shall attempt to explain how asynchronous content was collected – by way of a number of tools and methods, including the use of discussion forum transcripts, email communications transcripts, field notes and Really Simple Syndication (RSS) feed interaction. To begin, I shall show how RSS feeds were used as part of the research study; these were used only in cycle 2.

RSS Feed interactions statistics

RSS is often referred to as newsfeeds, and forms part of the technological affordance of the NING platform. RSS as a tool has been recognised as an effective means of allowing the syndication of website activity and content between websites, and has been intimately connected with online social environments such as blogs and wikis. The utilisation of RSS feeds enties, for example, can provide a summary of their output to readers in a simple format that can be read by a tool called an RSS feed reader. Therefore using RSS technology through the use of an online RSS reader (Google Reader), I was able to capture recent activities that had taken place within the CEN. I could therefore note when individuals became members, comment on a discussion,

⁵ SQL is a database computer protocol used to manage data in database management systems.

become friends with someone else, indicate an interest in an event, or reply to a comment. Later, in Chapter 5, I shall describe the observational schedule used. This data collected within the RSS reader served as a basis of observation of network-wide activity and participation.

Discussion Forum transcripts

Asynchronous discussion forums form part of the affordances within the network groups and yield provide a rich set of data. Within the discussion forums a number of dialogic activities took place, warranting the use of this data as part of the data collection inquiry. The computer-mediated communication of 23 online groups within CEN was explored as possible points of data collection in cycle 2. I wanted to gain a perspective on what members were talking about, and using this method afforded me the insight to make this a reality. Analysis of Asynchronous discussion forums was utilised in cycle 2, but was explored in greater detail in cycles 3 and 4. **Figure 3.5** displays a screenshot of one CEN group discussion.



Figure 3.5 - Screenshot of a CEN group discussion forum.

E-mail Communication transcripts

Transcripts of email communications were used throughout the study. In trying to provide a full and transparent picture, I decided to include the e-mail communication that formed part of the interaction between members of the network and myself. Naturally, some members used the internal email functionality of the network, but in some instances, this was not followed. In such cases external email networks and addresses were used; this had ethical implications, so I had to seek additional permission from members to use their response as part of the data.

Synchronous Activity Content

In cycles 2 and 3, I analysed synchronous computer mediated communication. Using synchronous computer-mediated communication, individuals from different places interact and communicate in real time. In this research setting, the synchronous communication was facilitated by a web conferencing tool called Elluminate Live which is a Java⁶ supported online application that enables individuals to conduct online meetings in real time. The application boasts a number of features that make it an industry leader in the conduct of synchronous meetings which merit its use by a number of academic institutions to offer online courses, conferences and training. Elluminate Live allows moderators to interact with participants, using a mixture of tools such as instant messaging, interactive whiteboard, voice and video exchanges. **Figure 3.6** shows a screen shot of an Elluminate Live session.

⁶ Java is an object-oriented programming language used to develop simple, portable web applications.

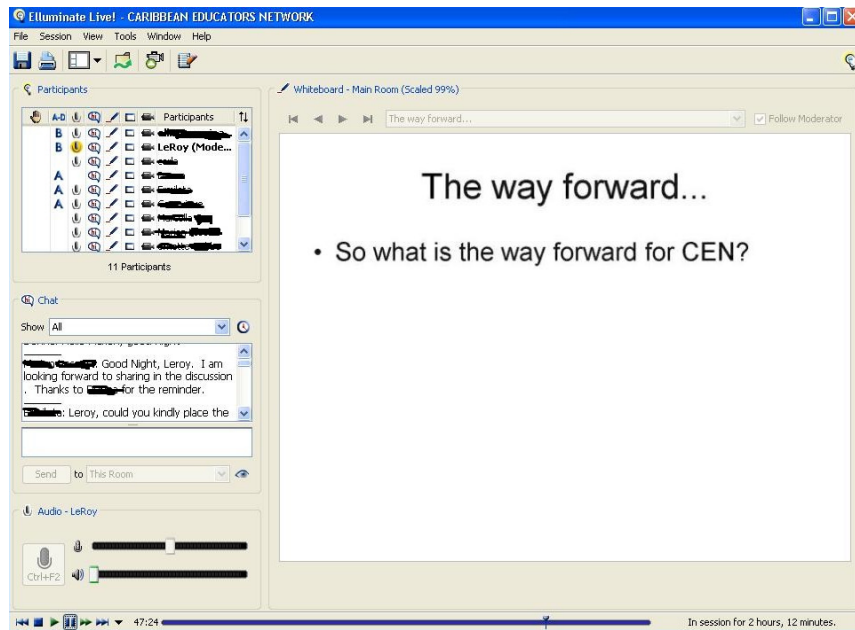


Figure 3.6 - CEN Elluminate Live session

In **Figure 3.6**, displayed on the left is a list of 11 participants with 2 serving as moderators (displayed on the left). We can see that most of the users have access to microphones, and a number of them are participating in the instant messaging chat session. On the right, a display of the PowerPoint presentation in the white board section can be seen. Elluminate Live also has a number of other functionalities that attempt to mimic a real classroom setting. This is achieved through what is generally identified as emoticons which mimic, among other gestures, the ability to raise hands, give a thumb up or down, handclapping, or display happy or unhappy faces. Sessions can also be recorded and stored on a server which can be accessed by users from a web link. These recorded sessions can also be converted into a number of video and audio formats for sharing online. In the CEN context, the recorded sessions were listed in the resources section, and members who were unable to attend live sessions can view these at their convenience.

Content analysis - Coding the Content

This section describes the coding procedure used in cycles 2, 3 and 4 of the research as a means of theorising the emerging framework.

Content analysis is an established research tool used to determine the presence of concepts within texts (Silverman 2006). The approach is nuanced in varying ways in the literature. The definition of content analysis as employed within this research is “an approach to the analysis of documents and text which may be printed or visual that seeks to quantify content in terms of predetermined categories and in a systematic and replicable manner” (Bryman 2008, p.274). In Bryman’s (2008) definition, content analysis is not restricted to text, but can be applied to visual data, which includes both still images and videos. As such, content analysis is grounded in context, and offers a pragmatic approach to building inferences from data that emerge from the context. Perhaps the most common approach to content analysis in research is the use of ‘word frequency’. Unfortunately, this may not convey the expected concept that the coder intended, and may interfere with the authenticity of the results (Weber 1990). That being so, I utilised an approach that not only provided frequency of codes but also displayed snapshots of the dialogue that supported the code.

The ubiquity of online networking has stimulated educational interest in the use of computer-mediated communication as a means of understanding collaborative knowledge-building. The availability of the threaded text in an online setting makes for an accessible way to create transcripts out of the dialogue (Henri 1992). Thus, using content analysis of these texts provides an acceptable way of interpreting meaning from text. Within the online research setting it was important to develop a coding approach that provided a way to explore the research questions or interests (Anderson et al. 2001). However, Ingram & Hathorn (2004) argue that there are drawbacks with using most coding approaches in online settings where collaboration is idiosyncratic. The authors contend that established coding schemes put emphasis on measuring (1) interactivity (2) perceived level of communication or interactivity, or (3) face to face collaboration rather than on online collaboration. Mindful of this criticism, I utilised content analysis as a means to understand the collaboration in CEN groups. The threaded asynchronous discussions were transcribed into separate message units in a chronological order and coded for meaning. The research question pointed to the need

for using an inductive coding procedure. This inductive coding process involved using an approach that was grounded in the context rather than subjecting the process to established coding themes. Following the coding procedure prescribed by Creswell (2009), I coded both asynchronous and synchronous content. Creswell recommends six steps in coding content:

1) Organise and prepare the data for analysis; 2) Read through all the data [to] obtain a general sense of the information and to reflect on its overall meaning; 3) Begin detailed analysis with a coding process; 4) Use coding process to generate a description of the setting or people as well as categories or themes for analysis; 5) Advance how the description and themes will be represented in the qualitative narrative; 6) Make interpretation or meaning of the data.

(Creswell 2009, pp.185-190)

The process began with cleaning up and organising the transcribed data into units of communicative action in the text (Creswell 2009). Following that, I read through the document and looked for themes that addressed the research question. Reading through the transcript made it possible to identify themes of meaning. Following the identification, I presented the themes in a number of formats (lists, tag clouds, frequencies). This provided a method with which to interpret the results. This approach was applied in cycle 2 (Chapter 5) and cycle 3 (Chapter 6). Cycle 4 (Chapter 7), however, required coders to read through the transcript of asynchronous computer mediated communication and infer meaning from the text. The benefits of studying asynchronous computer mediated communication are well established in the literature (for an overview see Henri 1992; Schrire 2006). The coders for cycle 4 comprised three individuals from the CAG, and one independent coder from the wider network. I used the codes from each coder to create a combined interpretation of collaborative knowledge-building within the group. I refer to this as an inter-subjective code. These codes were then categorised and linked to themes for further interpretation. This coding method was repeated for the recoding process in which I linked the inter-subjective codes to the themes and the coded processes and presences. This process was supported by a coding table which drew on the work of Garrison et al. (2001) and Heri (1992). Henri (1992) reasons a framework and analytical model that was helpful in advancing the CEN mediating framework. Henri argues that a deeper understanding of the computer mediated learning can be realised only through fine-grained content analysis. The model proposed by Henri (1992) comprises three main sections: "a framework defining the dimension of the analysis; an analytical

model corresponding to each of these dimensions; and a technique for analysis of message content" (Henri 1992, p.123). Participation, interaction, social, cognitive and metacognitive formed the 5 dimensions that were chosen to be part of the framework and analytical model. Henri (1992) maintains that the dimensions were chosen because of their connection to the work of educators working with distance learning groups. While Henri (1992) does not explain fully the justification for choosing the dimensions, I found the approach useful in developing a coding table to link the process and the presences. Content analysis also requires the understanding and use of the unit of analysis. This is described in the next section.

Unit of Analysis

There are conflicting interpretations of the designation, 'unit of analysis' in the literature. For all that, Henri's (1992) conceptualisation of a unit of analysis was helpful in my envisioning the unit as encompassing an argument thread or discussion (Henri 1992). Determining the unit of analysis was not an easy task. Even so, following attempts to code the word and sentence units, I decided that the message unit was the most appropriate for my purpose. As expected, the message unit represents a distinct threaded and identifiable statement that yields a reliable way of identifying and following the dialogue. Moreover, as this was an initial attempt to make meaning, it was fitting to start with a unit of analysis that was simple to code and manage. Particularly in cycle 4 (Chapter 7), I wanted a method that would be simple enough to be reliably coded by three or more individuals within the CAG who did not have the time to devote to extensive coding. The message unit was an acceptable way of making sense of data, and was used in previous studies. Garrison et al. (2001) for example, support the message as a unit of analysis since "the length and content of the message is decided upon by its author, rather than by coders...[and also provide] coders with sufficient information to infer underlying cognitive processes" (Garrison et al. 2001, p.17). The message unit is not without challenges, however. As a unit of analysis, the message can render more than one meaning, and this has implications for the way the codes are interpreted. The message unit of analysis requires each coder's decisions, thereby reducing the reliability and validity of the research (Garrison et al. 2001). Rourke et al. (2001, p.10), however, state that the message as a unit of analysis "has important advantages, [since] it is objectively identifiable...produces a manageable set of cases...[and its] parameters are determined by the author of the message". There was

therefore ample justification for my co-opting the message as the unit of analysis which provided a reliable approach in which messages were clearly marked out from the content. Further details of how the coding was done will be discussed in Chapters 6 and 7, but for now I shall move on in the next section to describe how activity theory was used to inform the methodological approach in the research.

AODM: An Activity theory methodological approach

The Context

The Activity-Oriented Design Methods (AODM), introduced earlier in Chapter 2, is a methodological tool based on an interpretation of activity theory. The approach, utilised for planning the process of design, has been used in human & computer interaction engineering workplace settings (Mwanza 2002), and in the study of collaborative knowledge-building in the formal education setting (Greenhow & Belbas 2007), but the AODM remains a much unexplored area in online social networking contexts. Thus in this section I intend to spotlight AODM as a design planning tool as a way, firstly, of assisting the operationalising of activity theory to guide the methodology in the research context, and, secondly, of testing its methodological utility in the research setting. The utilisation of AODM in this research context, therefore, builds on the methodological reliability of the AODM. Although I am describing the AODM in this chapter, it should be noted that it evolved as part of the research in cycle 2 (Chapter 5). But before I explore the application of the AODM in cycle 2, I am going to provide a description of the tool and how it was applied in previous studies.

As a planning tool, AODM tends to be largely iterative, and aims to help designers “generate insights for further study and refinement” (Greenhow & Belbas 2007, p.369). It stands as a satisfactory tool for advancing the development of an online social networking collaborative knowledge-building environment. The AODM provides a comprehensive and empirically tested set of tools for operationalising activity theory in design analysis and the development process by making explicit the “process of gathering, analysis and communicating design requirements” (Mwanza 2002, p.214). To accomplish these processes, four methodological tools are offered, which form part of six consecutive stages which, Mwanza (2002) cautions, do not necessarily need to be applied in a bounded sequential order. Such flexibility allows for the tools to be used in

isolation from one another, and affords the opportunity to use and adapt the tools in a research context without the need to use all the tools. Joyes (2006), for example, adapted the Eight-Step-Model - an AODM tool, in developing an analytical tool as part of an e-learning training module. The four methodological tools of Mwanza's activity-oriented model are (1) An Eight-Step-Model (2) An activity notation (3) A technique for generating sub-activity-oriented research questions (4) A technique for mapping operational processes. I shall offer some information about these tools and the six stages that they are part of in the next section.

The AODM stages

Stage 1 Interpreting the situation being examined in terms of Activity Theory.

Like any good planning in a learning design setting, design decisions are best made with a good understanding of the socio-cultural context, a consideration that constitutes a key component of the design process. As such, this first step is in keeping with design activities of needs analysis or benchmarking. The Eight-Step-Model is a tool used at this stage. The Eight-Step-Model allows for a comprehensive framework for gathering data, and it simplifies the processing of activity theory in the research design process. The Eight-Step-Model operationalises the components of the activity system triangle into questions given in **Table 3.3** below:

Table 3.3 - AODM's Eight-Step-Model

The Eight-Step-Model		
Identify the: -		Question to Ask
Step 1	Activity of interest	What sort of activity am I interested in?
Step 2	Object-ive ⁷	Why is the activity taking place?
Step 3	Subjects	Who is involved in carrying out this activity?
Step 4	Tools	By what means are the subjects performing this activity?
Step 5	Rules & Regulations	Are there any cultural norms, rules or regulations governing the performance of this activity?
Step 6	Division of labour	Who is responsible for what when carrying out this

⁷ Object-ive as used in this research refers to the motive of the activity, while the outcome is seen as a design outcome or anticipation.

		activity, and how are the roles organised?
Step 7	Community	What is the environment in which this activity is carried out?
Step 8	Outcome	What is the desired outcome from carrying out this activity?

Source: (Mwanza 2002, p.128)

Stage 2 Model the situation being examined

The information collected from the Eight-Step-Model is used in this stage to create a representation of the activity system being researched. The use of this process simplifies the analysis of the collected data, which can then be interpreted. Mwanza (2002), however, contends that while this process of modelling simplifies the interpretation of collected data, it is still problematic to use for critically analysing learner activities, since the information is still too general or abstract (Mwanza 2002). This is where the next stage is useful inasmuch as it breaks down the complex activity system making detailed and significant interpretations possible.

Stage 3 Decompose the activity system

The decomposition of the results from the Eight-Step-Model is achieved through the Activity Notation tool which facilitates simplification into smaller units for analysis. These units are, however, interconnected through the shared object of the main activity system, as illustrated in **Table 3.4**.

Table 3.4 – The AODM's Activity Notation

The Activity Notation				
Actors (Doers)	~	Mediator	~	Object-ive (Purpose)
Subjects	~	Tools	~	Object
Subjects	~	Rules	~	Object
Subjects	~	Division of Labour	~	Object
Community	~	Tools	~	Object
Community	~	Rules	~	Object
Community	~	Division of Labour	~	Object

Source: (Mwanza 2002, p.152)

Stage 4 Generate research questions

At this stage, research questions are created from the decomposed relationships from the AODM's Activity Notation, (**Table 3.4**), to create research questions that are based on components. As a result, the questions are directly and explicitly linked to a component or sub-activity within the activity system. At this stage the generated questions can be used to guide the design process and analysis, or serve as a way to evaluate the outcome of the goals (Mwanza 2002). Therefore, stage 4 also serves as a launching pad for further exploration or inquiry. **Table 3.5** illustrates of the technique for generating research questions.

Table 3.5 – AODM's Technique of Generating General Research Questions

The Technique of Generating General Research Questions
What Tools do the Subjects use to achieve their Object , and how?
What Rules affect the way the Subjects achieve the Object , and how?
How does the Division of Labour influence the way the Subjects satisfy their Object ?
How do the Tools in use affect the way the Community achieves the Object ?
What Rules affect the way the Community satisfies their Object , and how?
How does the Division of Labour affect the way the Community achieves the Object ?

Source: (Mwanza 2002, p.155), emphasis provided

Stage 5 Conduct a detailed investigation

Further and deeper exploration takes place at this stage, at which the research questions from stage 4 are contextualized in such a way that they reflect responsiveness to the context. For example, the questions can be further explored using tools such as questionnaires or interviews, and can provide support for areas of focus during the application of such methods. Data analysis can also be employed to explore the links that exist between the components of the activity system. Mwanza (2002) adds that the purpose of this analysis should not be to predict or find solutions for observable contradictions, but instead this process should be used for gaining a deeper socio-cultural and historical point of view of the research context. Such prediction and solutions should materialise following the next stage.

Stage 6 Interpret and communicate findings

In this stage, the information from the previous stage is interpreted and communicated, using a graphical representation of data (see **Figure 3.7**). The figure shows a re-modelling of the activity system under discussion, by mapping the research questions to sub-activities to observe patterns such as contradictions or conflicts. Specifically, the illustration shows how contradictions are mapped to the sub-activity system where the contradictions exist. This is aided by the use of arrows to link the research questions to the sub-activity (outlined in red). This stage facilitates the communication process to make explicit the areas of contention as well as patterns of relationship between the components. As the final AODM methodological tool, the technique for mapping AODM operational processes is used to explicate this process.

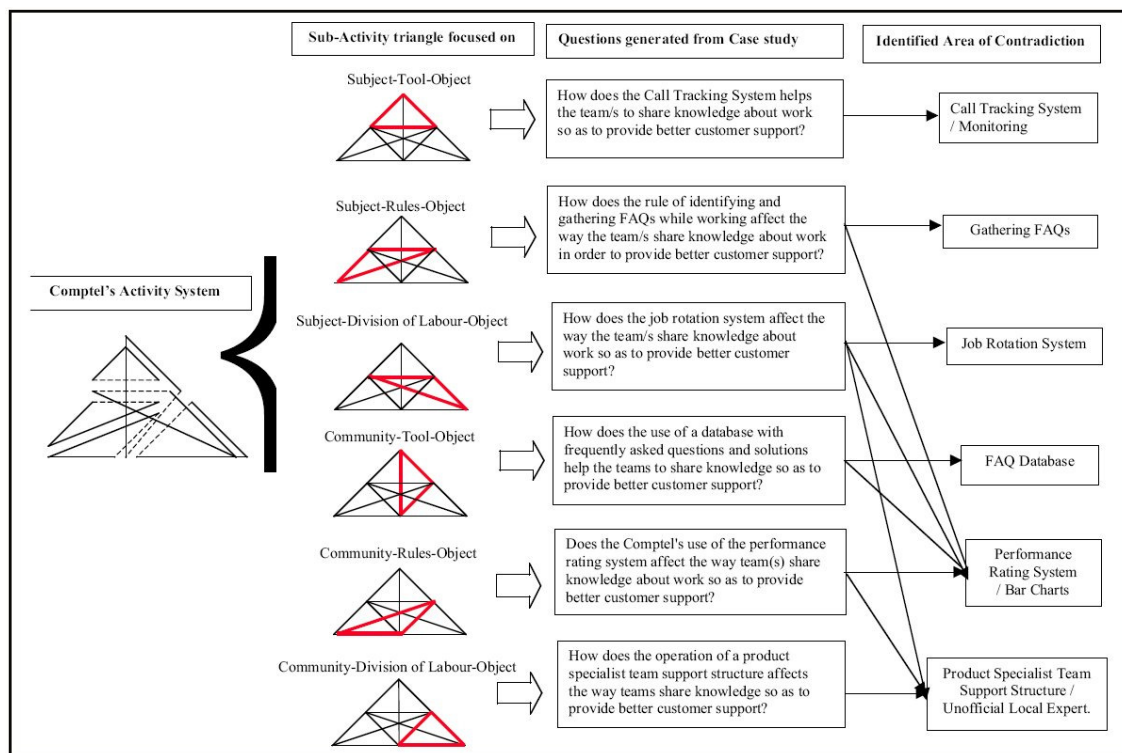


Figure 3.7 - Mapping AODM Operational Processes (Mwanza 2002, p.162)

On reflection, the AODM has proven to be a methodological tool that was useful in previous design contexts and provide a suitable tool to analyse the interaction, participation and activities. The use of the AODM in this research is featured in cycle 2 (Chapter 5). I end this chapter in the next section with the historical overview of the research.

The Research History

In this section I outline of the historical development of the research study, which is illustrated in **Figure 3.8** and **Table 3.6**. Through the A3 insert of the activity theory historical map illustration (see **Figure 3.9**), I also highlight how activity theory is used throughout the research.

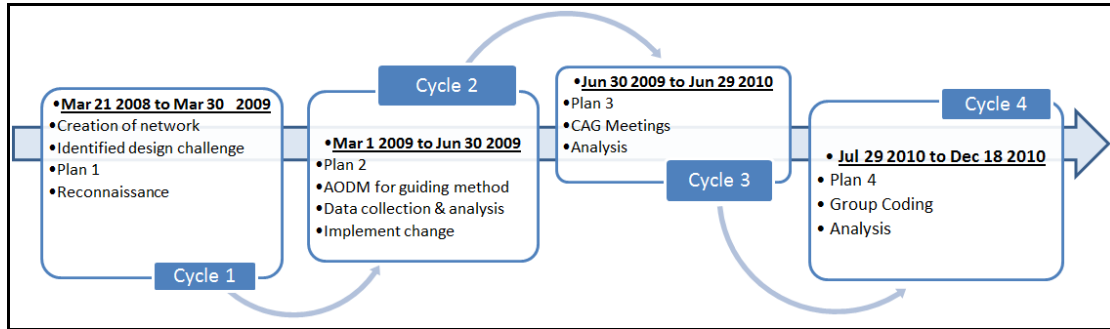


Figure 3.8 - The timeline of research

Figure 3.8 shows the research as comprising 4 cycles with specific start and end dates while **Table 3.6** gives a detailed breakdown of the specific research activity in each cycle.

Table 3.6 - Research time frame

Cycle	Date
<u>Cycle 1</u>	<u>Mar 21 2008 to March 30 2009</u>
Creation of network	(Mar 21 2008)
Identified design challenge	(Jun 2 2008 to Aug 14 2009)
Started PhD	(Sep 14 2008)
Plan 1	(Nov 07 2008 to May 21 2009)
Reconnaissance	(Jun 15 2008 to Feb 25 2009)
Data Collection & Analysis	(Feb 25 2009 to Mar 30 2009)
<u>Cycle 2</u>	<u>Mar 1 2009 to Jun 30 2009</u>
Plan 2	(Mar 1 2009 to Mar 25 2009)
Data collection & analysis	(Mar 25 2009 to Apr 28 2009)
Reflective workshop	(June 20 2009)
Implement change	(June 21 2009 to June 30 2009)
<u>Cycle 3</u>	<u>June 30 2009 to June 29 2010</u>
Plan 3	(Jun 30 2009 to Oct 18 2009)
CAG Meetings	(Oct 18 2009 to Dec 12 2009)
Analysis	(Feb 28 2010 to July 29 2010)
<u>Cycle 4</u>	<u>Jul 29 2010 to Dec 18 2010</u>
Plan 4	(Jul 29 2010 to Aug 9 2010)
Group Coding	(Aug 9 2010 to Nov 23 2010)
Analysis	(Nov 23 2010 to Dec 18 2010)

An history of activity theory in thesis.

In **Figure 3.9**, each section represents a different activity system interpretation. The analysis starts with the first section on the top left and progresses to the right. The first section (top left) represents the learning design activity system–A (cycle 1), and the last section represents the activity system analysis of the Diversity of Learning group (bottom right). The letter next to each activity system indicates the level or instance of development of the activity system. In some cases, one activity system is seen contributing to another activity system, as in the case of CAG activity system–A, and the CEN activity system–B. This multiple plane analysis, presented in Chapters 4 – 7, provided a way to demonstrate the historical development of the research through an activity theory lens. I illustrate this development in the activity theory map of the research in **Figure 3.9** (see A3 insert of Activity Theory Map).

- This map holds the space for the activity theory map as an A3 addendum to the thesis

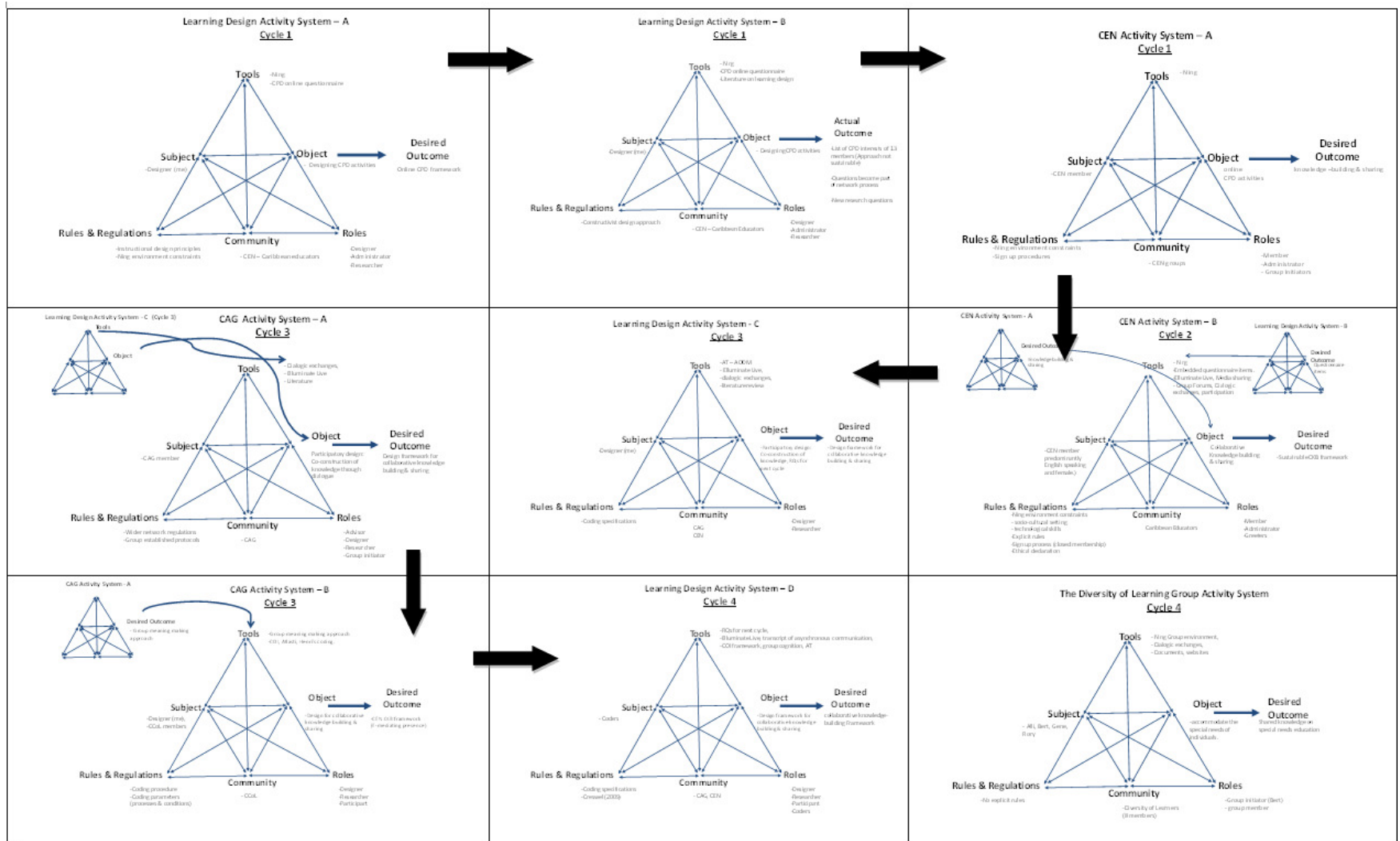


Figure 3.9 –Map of activity theory in the research -A3 insert

Conclusion: The Way Forward.

This chapter presented methodology as a complex set of approaches in which the research design was realised. The theoretical thread was presented as the foundation for the action thread that followed. This did not detract from the interconnectedness of theory and action in the research, however. In fact, there were times when it was difficult to decide how I would weave the methodology so as not to lose the complexity that typified the research. This complexity is seen in the way activity theory unfolds in the research. The AODM for example while described as a methodological tool to capture the nature of the network, only evolved as part of cycle 2. Activity theory, however, served as a way to capture and represent the historicity of the research, thus providing a wider perspective of the development in each cycle. The way forward, therefore, provides a cycle by cycle snapshot of this wider perspective. In extending the thread metaphor further, I shall depict the first cycle as an additional thread in the wider action research as I continue to design a network of ideas in the succeeding chapter.

4. Chapter 4

An initial look at the CEN

Introduction

The purpose of this chapter is to describe the initial action research inquiry, (cycle 1) of the research project. The chapter represents planning, acting and reflecting as three distinct sections in a recurring thematic approach in the thesis. In these sections, various aspects of the research process are contextualised historically. This cycle was largely unsuccessful because it did not provide the insight that was needed for informed intervention. The emphasis was on gaining an insight into membership interests rather than acquiring on a deeper understanding of the CEN. This realisation prompted me to rethink my approach and adopt a more rigorous one. Despite the change, however, this chapter serves to give an account of the historical development of the CEN activity system; and of how, as designer, I was able to make sense of the limited data, and implement some interventions in the network.

The first section (4.1 planning) outlines the research design for the cycle. This section presents the analytical framework and the methods used to collect data. In the second section (4.2 acting), I assume the role of researcher and designer, and use relevant data to relate the story of my observations and interventions. An important part of this section is the account of the transformation that took place in this cycle. In this section I begin to explore activity systems analysis, using activity theory as a way of shaping my inquiry from the learning design plane (perspective), and also of examining the initial conditions of the CEN activity system at the community plane. I begin with the analysis at the learning design plane, since I would like to give readers an understanding of the socio-cultural perspective that shaped the learning design activity. The learning design plane forms part of the multiple plane analysis, which I introduced earlier in Chapter 2. This approach allowed the flexibility of zooming in and out on areas of focus. In addition, I present an activity at the community plane to provide an initial perspective of the CEN activity system. It was only during this phase that I began to ask, "What were the tools members were using? What was the outcome of using these tools? What rules and roles shaped how these activities were carried out?" These questions helped to shape my thinking for the way forward in cycle 2 (Chapter 5). Section 4.3 is a

discussion and review of the literature on the themes that emerged from the data. The literature is discussed in this section in order to make sense of the collected data, and to clarify and objectify it as well as to make informed decisions on the way forward in cycle 2 (Chapter 5). Using this approach, I not only built on the research context, but also established links to what already existed in the literature in a manner that brought added value and meaning to the data. The final section 4.4 provides a look at the way forward in cycle 2 (Chapter 5). I now turn my attention to section 4.1 – Planning - to show how the methodological inquiry developed.

4.1 Planning: The Action-Cycle Design Process

The planning context

With 375 CEN members (up to March 30 2009), a major thrust was directed towards gaining an understanding of the membership interests which would, in turn, inform the designing of a continuing professional development (CPD) framework for the CEN. Getting there, however, was not a straightforward task; this chapter evidences the fuzziness that typified this first cycle.

The primary goal at this stage was to facilitate the development of a CPD framework. However, this remained a difficult task without an understanding of members' interests and how their needs could be satisfied. A data collection method that would capture such interests in an online setting therefore seemed inevitable, particularly since the CPD approach was located in an online setting. I describe the data collection method contextualised in this cycle in the analytical framework in the next section.

Analytical Framework

Objective

Use an online questionnaire developed in Google Docs, to gain an understanding of the CEN context that would enable me to create a CPD framework for the network.

General Research Question

What is the nature of a learning design approach for exploring a framework for mediating collaborative knowledge-building in the CEN?

Cycle 1 Research questions

Research Plane

What is the nature of the CPD interests of members of the CEN?

Design Plane

How do I go about designing an online CPD framework for the CEN?

The Methods of Data collection

This section describes the methods used to collect data. I use an online questionnaire created in Google Docs to capture the CPD interests of members of the CEN. Additionally, the review of the literature served as a way of making sense at the learning design plane.

Table 4.1 - Research questions, Methods and time frame of this cycle.

Research Questions	Data	Method of Analysis	Timeframe
What is the nature of the CPD interests of members of the CEN?	Online questionnaire	Descriptive analysis Observation: field journal, responses from network members	Nov 7 2008 to Mar 30 2009
How do I go about designing an online CPD framework for the CEN?	Text	Review and reflection of literature	Nov 7 2008 to Mar 30 2009

In a recursive research process, it was necessary to operationalise an analytical framework that was responsive to the research questions; hence the focus on how the data from the research was analysed. The analytical framework leaned on a socio-cultural approach in making sense of the data that emerged from this cycle. As such, this builds on the idea that meaning-making is bounded by the context of

the research, and is an idea that resonates with the naturalist inquiry (Lincoln & Guba 1985) approach.

4.2 Acting: Observing and Analysing Process

The Acting Context

In the background, members continued to forge relationships and share concerns in and knowledge of various interests and topics in specific groups within the CEN - all this taking place despite my focus on collecting data via the online questionnaire. With growing interest, participation and activity, groups continued to evolve and increase. This increased activity and participation caused me to rethink the overt focus on the CPD learning design object for the network, and focus more on what was happening in the groups. This is explained later where I give an activity systems analysis of two activity systems. In collecting the initial interests I focused more on planning for network-wide synchronous sessions than on the object that was shared by members. I give more attention to this shared object later in the chapter.

The CEN Members – A first look

An online questionnaire (see **Appendix 1**) was administered which, even though designed with the intention of collecting data for informed decisions on synchronous sessions, also addressed other concerns of collaborative knowledge-building and sharing. An important part in this section is the representation of the analysis of the activity system. After an initial piloting on two members, the number of items in the questionnaire was reduced. The following recommendation was made by one of the pilot members:

New sign ups can also say why they joined the network and what they hope to gain from it, what [is] their area of interest in addition to their philosophy of education.

email communication from Jean, April 22, 2009

Table 4.2 gives a breakdown of membership by country, collected from the CEN membership database (see Chapter 3). The purpose of the table is to show the demographic makeup of CEN at the time when the online questionnaire was administered.

Table 4.2 - Country membership (up to March 30 2009)

Country	n= 375	Frequency	Percentage
Trinidad and Tobago		91	24.3
Barbados		34	9.1
Anguilla		20	5.3
Saint Kitts and Nevis		17	4.5
Virgin Islands, British		13	3.5
Guyana		11	2.9
Jamaica		10	2.7
United States		9	2.4
Saint Lucia		7	1.9
Dominica		5	1.3
Antigua and Barbuda		4	1.1
Saint Vincent and the Grenadines		4	1.1
Martinique		3	.8
Grenada		2	.5
India		2	.5
Bahamas		1	.3
Cayman Islands		1	.3
Dominican Republic		1	.3
Montserrat		1	.3
Puerto Rico		1	.3
United Kingdom		1	.3
Total		375	100

The table shows Trinidad & Tobago as the country with the largest percentage (24.3 %) of membership in CEN. Barbados follows as the second largest with 9.1 %.

An email was sent to all members using the internal emailing feature of the NING platform, requesting them to complete the online questionnaire. A link to the questionnaire was also added as a menu item on the network site. Unfortunately, despite these attempts, the response was generally very poor. There were, however, instances in which additional feedback pointed to a clearer direction. This feedback revealed that I was not the only one observing and taking note of what was going on in the network and motivated added interest in including others as collaborators in the research process:

I must say that membership on CEN surpassed my own personal goals[and]...one of my findings is that you as the leader of the network will need strong leadership to back you up to meet the varied needs of members and the demands of running the network. Do you realize this network has grown by 54 members in the last 7 weeks? That is significant.

e-mail communication from Jean April 23 2009

The statement above drew attention to the growth of membership in the network, a fact supported by **Figure 4.1** below, which shows the membership by month beginning March 2008 to December 2009. I move on now to topics that were of interest to members.

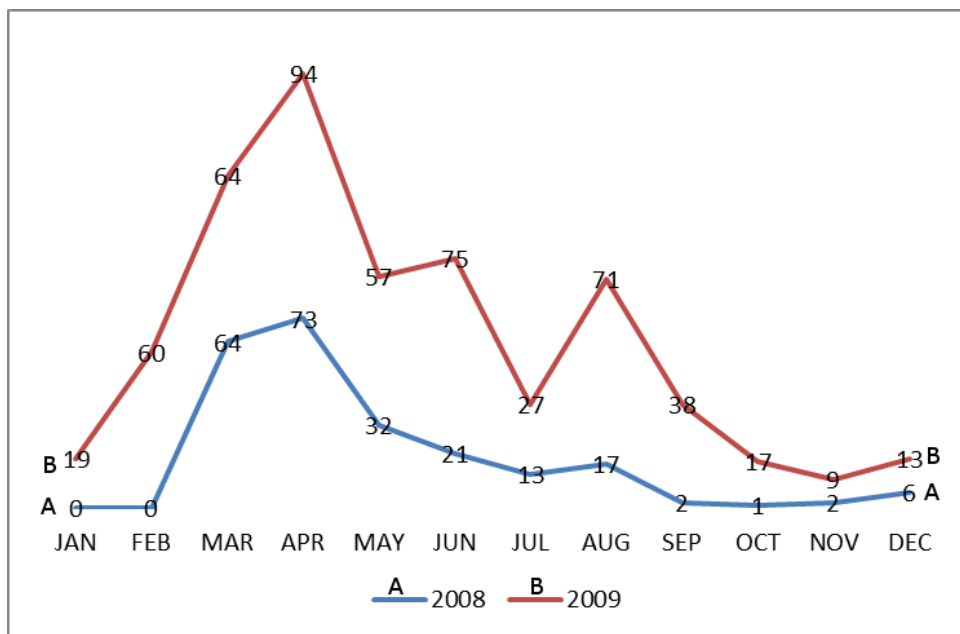


Figure 4.1 CEN membership growth 2008-2009

The member interests

I collected responses to the member interest section of the online questionnaire constructed in Google Docs. Members were required to give their educational working environment and list topics that would interest them for discussion in the CEN. Unfortunately, the response represented only 3.5% of the membership, and this led me to aim at a stronger representative sample. A summary of the 13 respondents' responses is indicated in **Table 4.3** below.

Table 4.3 - Membership interests.

Education Environment	Interests
Primary	<ul style="list-style-type: none"> - Security in schools - Teachers' rights

	<ul style="list-style-type: none"> - Assistance for non-academic students at the primary level - Separation of academic and other activities - Management in Education - ICT in Education - Clinical Supervision - Teaching strategies for slow learners
Secondary	<ul style="list-style-type: none"> - Teaching strategies - Using internet in research - Tools and software for teachers (2)* - ICT education (5)* - Student discipline - Teacher Education in the Caribbean - Teacher Induction - Assessment & evaluation techniques (2)* - Subject specific content (Essay writing, Map work, Plate Tectonics, weather) - Games as a method of teaching
Special schools	<ul style="list-style-type: none"> - Literacy - Use of technology in teaching and learning in the classroom - Universal Secondary Education - Teachers' working conditions (are) students' learning conditions

* The numbers next to the interest represent a tally of that particular interest

Owing to the lower response to the online questionnaire than I anticipated, **Table 4.3** represents a very limited perspective. However, the data indicated that members were interested in areas such as ICT in education and teaching strategies.

Motivation for joining

In this section I continue to explore the limited data showing the reasons members gave for joining the CEN. I shall return to a more comprehensive exploration of this question in Chapter 5. Since this was a learning design exploration in context, I

wanted to relate the story as a lived experience and, therefore, I continued to use the data from the survey despite its being limited. When asked, "Why did you join CEN?" the respondents gave a range of responses that started to reveal the shared object as collaborative knowledge-building in group settings. **Table 4.4** shows some of the comments from the online survey. These comments revealed that there were some recurring themes with particular reference to knowledge-building & sharing, networking and being part of a community. These recurring themes are represented in **Table 4.4** below:

Table 4.4 - Responses from the online survey

Theme	n_i	Statements
Knowledge-building knowledge-sharing	9	serve as a medium for gathering new ideas on new technologies in education; See my colleagues grow is my pleasure; Personal growth and fulfilment; I have learnt a lot; To further develop me as an Educator; I believe in improving my teaching and anything that will do that I am on board; My learning has been enriched by these sessions; To learn from my peers; Teachers can express their views
Networking	7	Networking; Meet other teachers; Opportunity to interact with professionals from the Caribbean; Liaising with Caribbean teachers; It's beautiful forging links with my colleagues in the region; Meeting with and socializing with other educators from the region; We don't need to go on Facebook or hi5 to meet teachers but on CEN
Community of Learners	4	To learn from my peers; The Francophonie group has allowed me to get current reviews of life in Martinique that I can use in my classroom; A sense of knowing that we as educators have a forum that can bring about change; Being part of a community of educators from the Caribbean region

An interpretation of the data shows that collaborative knowledge-building and sharing and networking were the most popular interests - a finding that directed me to the object that I should be focusing on as learning designer. Additionally, the finding revealed a need for further interventions and transformation. This consideration is given some attention in the following section.

The intervention - First Transformation

The relatively poor response to the online questionnaire meant that I had to reshape the methodological inquiry process to one that allowed me to get a deeper understanding of the CEN. Although the data from the questionnaire was limited, it hinted at the need for a transformation in the object of the learning design activity

system from the development of a CPD framework to a focus on collaborative knowledge-building and sharing. The respondents' comments proved that there were other issues at play. The following excerpt from my field journal revealed grave dissatisfaction with the inadequacy of the cycle 1 approach:

Missing the mark?

I really need to take things more seriously...time is going and I do not have the resources and time to waste. I think the online survey was a waste of time...only a few members take time out to complete it...and that is because I asked them to at the end of the live session. I think the suggestion from Jean is a good one that I can have members fill in the questions when they sign up or better yet...make it part of the profile...but I wonder how many questions that can go on the profile. I am sure I remembered it was limited.

The thing is, I do not understand how I could miss this? This is shouting me in the face....Participation is key and yet I clearly missed the mark. All this focus on interests is meaningless without user participation. [Perhaps this is] why they neglected to [complete] the survey in the first place.

I think also all this attention in the air, and reading on Activity theory points to activity within systems. But this is confusing stuff to me to say the least with all the triangles and object, there is no way I am going to use this to help me make sense of it all...still need to understand more.

Research Journal, Sunday March 15 2009

Background to intervention

Analysis of the limited data revealed that I had missed the mark and needed to use a methodological inquiry that factored-in an approach that was more empirically sound. This point was borne out by the excerpt quoted above from the research journal, which showed that my initial apprehension in using activity theory to help me make sense of the learning design process was ill-informed. This challenge motivated me to undertake a further exploration of activity theory literature, but methodological guidelines using activity theory proved difficult to find. Mwanza's (2002) activity theory approach, however, caught my attention as a tool that seemed helpful in making sense of the CEN activity system. In cycle 2 (Chapter 5) I explain how I adapted this approach to the research context. But before analysing the CEN activity system in cycle 2, I shall give an initial overview of the CEN activity system of this present cycle so as to provide an account of the historical and cultural development of the learning design and the CEN (community levels).

I made changes to the network sign up process to reflect some questions from the online questionnaire. A clearer picture taking shape following my observation and members' responses, I felt that adding some questions to the sign up process was

an easy way for data to be collected and in this way the signup process would become an unavoidable way of members' supplying data as well. The responses also formed part of the user profile, and served as an open display of member interest and background. **Figure 4.2** shows a snapshot of the profile page after the addition of questions in the sign up process. Likewise, the data also served as an affordance of the social networking software platform, in that the responses now formed part of a database that could be downloaded for further analysis.

As this development had ethical implications, it prompted the amendment of the statement granting permission to any member of the network to use the data collected from the network for research purposes, as well as for the advancement of the network. This also formed part of the membership profile (see **Figure 4.2**). The ethical statement, which was included in the sign up process, is seen below:

This is a learning and research community and at times information is shared with each other on the network. By joining this network you give your consent to use your information as part of the development of the community and for research conducted by members of the network. Please note that this is a closed community. As such your data and information is protected and viewed only by members of the network. All attempts should be made to conceal your identity if specific user data is used. Do you understand this statement? Yes, No

Ethical statement from CEN website

Profile Information

Your working environment would most likely be categorised as
Department of Education

Please suggest at least 3 areas/topics that you are interested in?
identity and belonging, youth and youth voice, teacher education

Why did you join the CEN network?
To connect with a network of thinkers whose work relates to and is informed by their Caribbean identity.

About Me:
Doctoral candidate in International Education Policy at the University of [redacted]
[redacted] My dissertation research examines issues of [redacted] belonging from the perspective of secondary school teachers in [redacted]

My Views on Education (Your Philosophy)
"Many people just do what they do with no particular passion or commitment to it... others genuinely love what they do; would probably do it for free if they had to, and can't imagine doing anything else. Understanding what makes the difference is essential for transforming education to meet the real challenges of the twenty-first century." - Sir Ken Robinson

"This is a learning and research community and at times information is shared with one another on the network. By joining this network you give your consent to use your information as part of the development of the community and for research conducted by members of the network. Please note that this is a closed community. As such your data and information is protected and viewed only by members of the network. All attempts should be made to conceal your identity if specific user data is used. Do you understand this statement?"
Yes

Figure 4.2 - Profile page showing the changes implemented

To my way of thinking, my approach was short-sighted, as was attested to by the fact that members were more interested in doing things in the network groups than in participating in synchronous sessions. An entry into my field journal showed my dissatisfaction with the approach: "I have to rethink this but should seek advice from members to see what they think about that" (Field Journal March 19th 2009). I wanted to develop an understanding that would effect change, and my desire was realised through the adding of questions from the online questionnaire as part of the network sign up procedure. Additional interventions also formed part of the process and are displayed in **Table 4.5** below:

Table 4.5 - List of interventions

Interventions
<ul style="list-style-type: none"> - Introduced new tool Elluminate Live for conducting synchronous sessions <p>Using Elluminate Live on March 21, 2009, I shared data from questionnaire with wider CEN membership and discussed way forward</p> <ul style="list-style-type: none"> - Members volunteered to take on roles of Moderator and Greeter - Added items relating to education environment, reason for joining the CEN, academic and professional interests, and philosophy of education - Updated the ethical statement part of the sign-up process, rather than having it in front page

While these interventions occurred in cycle 1, I provide further discussion on these interventions in cycle 2. The activities and participation revealed that design for learning in the CEN context was a complex process that needed careful thinking through, and that the idea of using an online questionnaire to solicit responses was unsuitable to the research process, as it depended on users' taking the time to answer the questions. While there is some indication that knowledge-building and sharing can take place both at the wider network and the smaller community groups levels, how this plays out in social networking websites leaves much to understand. Thus, what this pointed to was the need to understand not just the nature of CEN, but to gain a multiple view of how this performs within a social networking platform, with the technological affordances of social media and web 2.0 tools. The data also showed that members wanted to learn from and share with one another, and this situation suggested the notion of informal learning. The role of informal learning in online social networking settings was addressed in Chapter 2. But before I discuss

any issue that was addressed, I focus on using activity theory, as a way of providing a multiple plane analysis of the learning design and the CEN activity systems.

The CEN Activity System- A First look

In this section I adopt an approach introduced by Rogoff (1995), which supports the idea of participation occurring in three different planes of activity: the personal, interpersonal and community or institutional. This approach involves the analysis of development that views the three planes as nested activity systems. Rogoff (1995) contends that these three planes are intricately linked to one another: One plane “can become the focus of the analysis at different times, but with the others necessarily remaining in the background of the analysis” (Rogoff 1995, p.139). These three planes are seen as a mutually constituting, interlocking process in which development occurs; to understand each plane requires the involvement of the others (Rogoff 1995). Thus, Rogoff’s (1995) conceptualisation provides a helpful approach to multiple plane analysis to trace the development in interlocking activity systems. Boer et al. (2002) used the multiple plane approach to investigate the nature of situated knowledge in an organisation setting, while Singh et al. (2007) used this approach to explore the design of teaching materials within a collaborative knowledge-building & sharing setting. The approach, therefore, afforded me the opportunity to see how the multiple plane analysis can be applied in this research setting. With this in mind, I traced the development that occurred on the three planes in a way that added a rich perspective to the research activity. Additionally, I thought that this would be a sensible way to approach the analysis of the data, given details of the development at the personal plane, and the transformation that occurred on the other planes of analysis as a result of the development at one plane. At the personal (learning design) plane I present the development that was mediated by the interaction with other activity systems and the tools that emerged out of the activity within them. The interpersonal plane of analysis allowed me to focus on the communication and interaction in CEN groups, while the institutional or community plane allowed me to focus on group and individual participation in the wider CEN. **Figure 4.3** shows the dynamic relationship between the three constituting planes of activity systems.

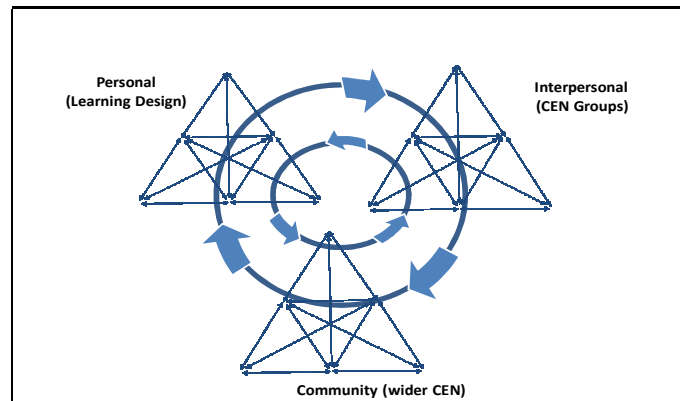


Figure 4.3 – Relationship between the 3 planes of analysis

This illustration gives a panoramic perspective of how activity theory is used in the various stages of the research project. **Figure 4.3** emphasises the non-hierarchical nature of the relationship between the activity systems. I proceed at this time to look at activity at the personal plane, which reveals my activity as learning designer in the network.

The Personal Plane - Learning Design Perspective

The network was big enough to allow members of similar interests to form learning communities. I did not fully understand the nature of the network and the activity that was taking place in these learning communities, so I used Activity-Oriented Design Methods (see Chapter 3) as a means of acquiring a deeper understanding of the CEN. However, before I discuss the inquiry and interpretation of AODM in the research setting in cycle 2 (Chapter 5), I describe the initial activity theory perspective of two activity systems of research focus. I begin with a short activity theory analysis that explores the starting conditions at the personal and community planes. It is difficult to illustrate this dynamism in a static way, so I use diagrams to illustrate some of the transformation in the activity systems.

An initial Learning Design Perspective

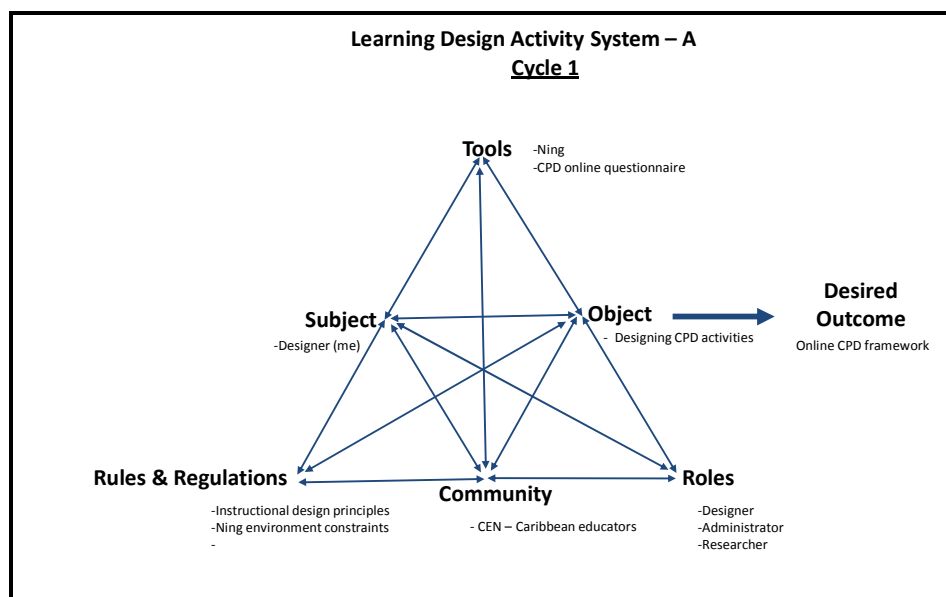


Figure 4.4 - The initial learning design activity system

This description of the learning design activity system in **Figure 4.4** represents my initial undertakings as designer within this research project. The learning design activity system shows that I (**subject**) had a particular challenge of designing a CPD activities (**object**), and also that by making the tools available to members they would use them and would in turn create an online CPD framework (**desired outcome**). I (**subject**) created this network using the social networking platform NING (**tool**) on March 22 2008, and made it available to Caribbean educators (**community**) who, through a snowballing approach, invited fellow Caribbean educators to take part in professional development activities. I chose NING because of the technological and social affordances it provided to individuals in creating online spaces for interaction, and its ability to bring together Caribbean educators from across the region. NING would support a range of activities, so it was not by chance that I decided to use this platform for hosting the network. Likewise, I needed a platform that could easily facilitate the development of an online Caribbean-wide professional development initiative for educators. NING provided the tools that would support a range of activities including sharing of content in text, audio, video and documents. Additionally, the platform provided a way for individuals to link up with individuals of similar interest. Individuals started to

perform various roles like greeters and group initiators. As designer, my intentions were to facilitate the development of a framework (**desired outcome**) for online continuing professional development. How this was to be achieved remained a challenge. My thinking was constrained by my instructional design background and the NING environment (**rules & regulation**) in which the design process was situated. I sought to apply a very restrictive instructional design process to a complex dynamic online social networking environment. There therefore seemed to be a tension within the learning design activity system, out of which came the research and design activity that followed in subsequent cycles. The motivation for designing CPD activities (**object**) was fuelled by the need to develop a sustained online CPD framework (**desired outcome**). I thought that I would utilise the interests from the CPD online questionnaire (**tool**) to plan synchronous network-wide professional development activities. But achieving this outcome remained a challenge (tension) because, as indicated earlier, very few individuals responded to the questionnaire. This tension did not align with the object and therefore, motivated me to reshape my focus within the learning design activity system. In the next cycle (Chapter 5) I describe another instance of the learning design activity system, where this transformation is illustrated. **Figure 4.5** is the second instance of the learning design activity system presented, in this case, as a way of revealing the historical development of the activity system.

A Learning Design Perspective - (after intervention)

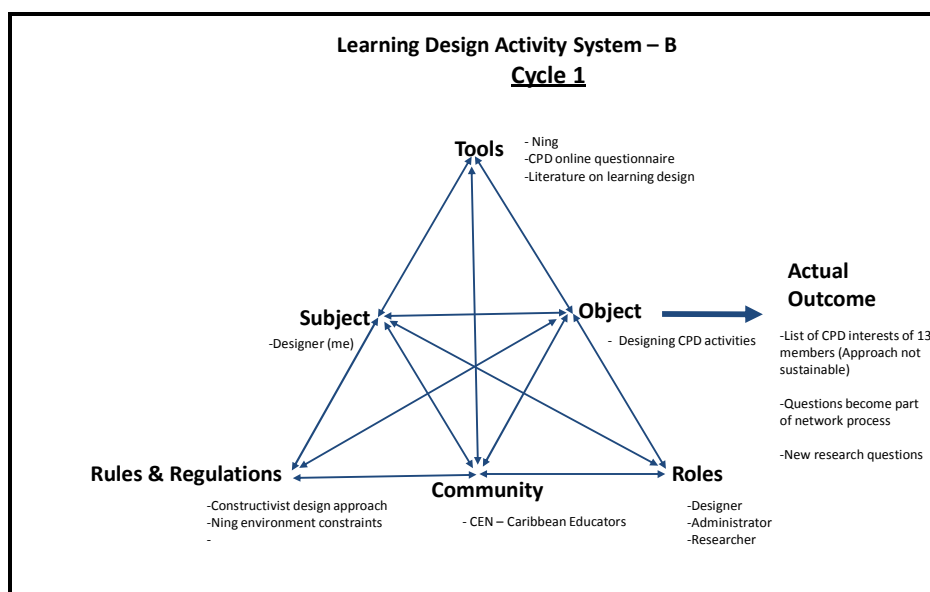


Figure 4.5 - Learning design activity system (The Actual) after intervention

After the intervention, the learning design activity system revealed certain deficiencies that needed addressing. While the design object remained the same, the desired outcome was not realised. **Figure 4.5** illustrates the notion of the 'actual outcome' as an indication of what resulted in activities in the activity system. Thus, the activity resulted in an outcome that proved unsuccessful from the learning design standpoint. This challenge pointed to the need to discover how I could get a better insight into what I should be focusing on as designer. The network was 15 months in operation, with 375 members, and the approach I was using could not provide a true picture of membership interests that would enable me to effectively design CPD activities as part of the wider online collaborative knowledge-building framework. This tension led to the rethinking and redesigning of the network sign up process. From this point on new members would be required to answer some questions before they could participate in the network, and required existing members would be required to update their profile the next time they logged on to the network.

The Community Plane – The CEN

An initial analysis of the CEN Activity System (before intervention)

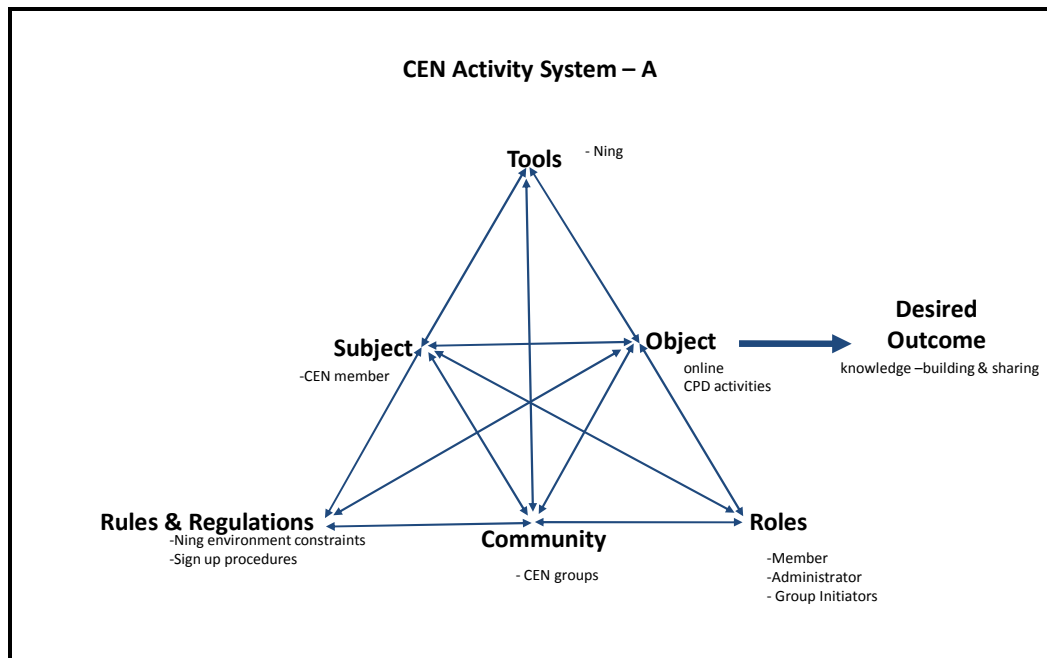


Figure 4.6 - The initial learning design activity system

There were a number of starting conditions in the CEN activity system, which are represented in **Figure 4.6**. I provided a number of tools because I recognised their importance for the members (**community**) with a particular set of restrictions (**rules & regulations**). Some of these restrictions I decided upon, while others were, naturally, part of the NING platform. Additionally, the design activity was constrained by the environment in which this activity was situated. For example, the sign up process was required before any member could access the network features. Thus, the technological restrictions of the online social networking environment shaped the way the object was enacted. I had some idea of the various roles in the activity system, but was not too certain about what might happen over time. Nonetheless, as designer I sought to shape the network by facilitating the development of a network-wide CPD framework, using an online questionnaire to gather membership interests. Over time, more individuals with an interest in education joined the network. The membership growth exceeded my expectations. There were individuals, for example, who were not located in the Caribbean region, but who wanted to identify with, share and learn in this setting. Members eventually formed a complex network of learners with varied interests and characteristics. I thought that there might be a community occurring, but instead, a network evolved, with a range of smaller learning communities (groups). The tension between my intentions and what was actually happening paved the way for a transformation in the personal plane (see **Figure 4.5**) where I had to change focus from the network-wide CPD approach to one that paid attention to collaborative knowledge-building and sharing in small groups. Collaborative knowledge-building is participant driven and centred, and I envisioned that as an approach to CPD in the informal social networking setting (see Chapter 2). Out of this some really interesting collaborative knowledge-building and sharing communities evolved. Members were creating new groups and welcoming new members, and engaging in dialogue in discussion forums. The development of naturally occurring roles also influenced the learning design activity system, bringing about transformations. **Figure 4.6** shows the configuration of the initial conditions in the CEN activity system. The tensions in the activity system revealed that the focus in the network was not CPD. It was signifying, instead, a need to focus on an approach to sustain a set of collaborative knowledge-building communities with a different set of activities. As my attention was focused on the wider network, I did not notice the

roles that were emerging at the group level, but I am certain that these roles in the groups meant that individuals were performing specific activities. These roles will be given more attention in the CEN activity system analysis in Chapter 5. But first, I review and reflect on the literature, with the aim of getting a deeper understanding of design for learning in the next section.

4.3 Reflection: Discussion & Literature review

A key feature of this chapter is the introduction of what constitutes design in the context of the research. A look at the analysis in the learning design activity system reveals a shift in the focus from an instructional design to that of a more constructivist, learning design approach. This section therefore argues for a place for this shift in the research setting, and presents an emphasis on a learning design framework within the CEN research setting. I begin this section by defining learning design as used in this research setting.

Learning Designs

In this chapter I refer to learning design as a concept that captures both the process and outcome of designing for learning or collaborative knowledge-building. Thus the terms 'learning design' and 'design for learning' are used interchangeably in the thesis. Learning design has received attention recently in the literature as an approach to designing learning activities and frameworks that meet the demands of various learning contexts. But there are some challenges in the way learning design is used in some settings that make it difficult to translate in this research context. I therefore begin this discussion by decomposing the concept of learning design and how it relates to the research setting.

A number of definitions and approaches of learning design is presented in the literature see (Steeple & Jones 2002; Conole & Oliver 2007; Beetham & Sharpe 2007; Boyle 2008; Lockyer et al. 2009; Conole 2010). Design is sometimes intentionally referred to as a theory when it offers "explicit guidance on how to better help people learn and develop" (Reigeluth 1999, p.5). More specifically, though, Reigeluth (1999) describes design theories as being "design oriented, [since] they describe methods of instruction and the situations in which those methods should be used" (Reigeluth 1999, p.7). Hence, design for learning theories

tend to be prescriptive, serving as ways to guide individuals in attaining a particular goal (Reigeluth 1999). Reigeluth's notion of prescriptive theory builds on earlier works of Snelbecker (1974). Reigeluth distinguishes between his prescriptive definition and the traditional descriptive theory which are commonly confused with prescriptive design theories (Reigeluth 1999). Design for learning, therefore, should focus on a process of guiding the attainment of goals. Conole & Fill (2005) describe design as a process that is pedagogically informed, and that makes use of appropriate tools and resources to accomplish the design task. In extending the meaning of design, Conole (2010) promotes the approach used by Open University Learning Design Initiative, where design is promoted as

A methodology for enabling teachers/designers to make more informed decisions in how they go about designing, which is pedagogically informed and makes effective use of appropriate resources and technologies. This includes the design of resources and individual learning activities right up to whole curriculum level design. A key principle is to help make the design process more explicit and shareable. Learning design as an area of research and development includes both gathering empirical evidence to better understand the design process as well as the development of a range of resource, tools and activities.

(Conole 2010, p.483)

Therefore, in the context of the CEN, more and more the notion of design should mean a process that makes a deliberate attempt at identifying learner needs with the intention of effectively mediating the collaborative knowledge-building process. However, unpacking the complexity of design exposes some tensions in the way designers label what they do. Traditionally, design is promoted as an instructional, static, linear process, while for others it is a dynamic, recursive process informed by learner activity and context. Yet for some, like Kaptelinin & Nardi (2006), design in an online setting fits within an interaction design framework which treats the design process as part of the broad efforts to guide the use of digital artefacts within various configurations. Interaction design comprises "all efforts to understand human engagement with digital technology and all efforts to use that knowledge to design more useful and pleasing artefacts" (Kaptelinin & Nardi 2006, p.5). Such a broad definition can be used to refer to the interaction occurring in work with human-computer interaction, computer-supported collaborative work, computer-supported collaborative learning, digital design, cognitive ergonomics, informatics, information systems and human factors (Kaptelinin & Nardi 2006), and therefore would be hard to pin down to the specific collaborative knowledge-building activities that occur within social networking settings. This definition of design,

therefore, is marred by the broad confinements of interaction design, and demands an approach that speaks to the nature of collaborative knowledge-building. Furthermore, as this research is situated in a collaborative, participative and complex user-driven online social networking setting, I was encouraged to use an approach that was faithful to the context. In support of this view, I place the emphasis on learning in my use of the term, thereby subscribing to the label, 'learning design' instead of 'instructional or interaction design'. 'Learning design', like 'instructional design' is used more in the formal institutional setting, where it is used to describe the development of learning activities. Conole (2008, p.191) for example defines learning designs as "the range of activities associated with creating a learning activity and provides a means of describing learning activities". This definition is an easy fit within formal education settings which require the collaboration of instructors and designers in making sense of the design process. Exactly how this definition translates into the informal social networking setting remains a challenge. However, as learning in the informal social networking setting is focused on the collaborative knowledge-building approach, I see learning design in this context as the process of developing and supporting collaborative knowledge-building through the use of a number of mediating artefacts as well as supporting activities. This conceptualisation is broad enough to support the inclusion of social networking technological tools and the embedded values that they imply. Accordingly, the design should be informed by learning approaches and descriptions that can be juxtaposed to facilitate collaborative knowledge-building. Thus, like (Willis 1995; Wilson 1996; Willis 2009), I recognize learning design as being informed by the context in which it is situated. As designer, therefore, I work with others in the social networking setting to develop tools to mediate the collaborative knowledge-building process. As a result, I use the term in a pragmatic sense particularly since, in the research context, learning assumes less of an instructional approach and more of a collaborative knowledge-building and sharing approach. Design in an online setting therefore is aligned to participatory design approaches. In light of this, it made sense to adopt a design approach that was collaborative, given that the learning environment is one that was dynamic and complex, with a varied membership base. User participation is therefore a key component of the design process and this directs attention to the notion of participatory design which I describe in the next section.

Participatory Design

Another interesting aspect of design in online settings is that it is characterised by participatory design and action research elements (Foth & Axup 2006). But what exactly is participatory design? Participatory design is recognised as a development from the action research approach which gives greater legitimacy to participatory design in an action research framework (Ehn & Sandberg 1979; Bodker et al. 1991). Participatory design initially called cooperative design, is traced to the Scandinavian software development in the industrial setting of the 1970s (Ehn & Sandberg 1979). The approach focused on democratic workplace applications in which workers “aimed both at a better understanding of freedom from managerial control and freedom to develop and implement strategies for democratization at work” (Ehn 1993, p.43). This was fuelled by the involvement of unions in a social democracy setting which encouraged workers to take part in the development process of technology in the organisation. The social democratic setting of the collaborative and informal Scandinavian methodological approach in action set the research precedent that seemed to have captured the interest of some researchers. Floyd et al. (1989), for instance, were captivated by its applicability to other contexts with different political settings. Building on this approach, Silva & Breuleux (1994) put forward a collaborative learning model of design that drew on the participatory design traditions. Although participatory design takes on different meanings and interpretations in the field, a basic feature of this approach is that members themselves “are in the best position to determine how to improve their work and their work life” (Schuler & Namioka 1993, p.xi). This idea of others being empowered to contribute to design process is highlighted by the work of (Joyes 2008; Conole et al. 2009; Conole & Culver 2009) and others who see the role of learning design in online settings as something that acquires more of a participative nature. Likewise, Fischer & Giaccardi (2006) provide a useful conceptualisation of design where design is seen as an open system that can be modified by others (co-designers) collaboratively overtime. Learning design in this setting, therefore, captures the participatory element as an inherent part of the process of developing and sustaining collaborative knowledge-building activities. But how does a learning design approach apply in an informal online social networking setting? I examine this in the next section.

Design in Social networking environments

Recent studies of how individuals share knowledge in online settings (Kanuka & Anderson 1998; Sharratt & Usoro 2003; Conceição et al. 2008) reinforce the idea of the social nature of learning in online environments. It is interesting to note how online learning environments are designed to take advantage of alternative design frameworks. That being said, it would be good to know how individuals should go about designing learning environments to take advantage of the benefits of the affordances of social networking technology. The traditional view of design leans towards the cognitive and behaviourist assumptions of learning (Willis 2009), and such a bias implies that the learning process can be predicted easily. But this does not appear to be the case in the online settings, in which my research project is situated. The structured use of measurement, precision methods and order (Solomon 2000) looks counterintuitive to flexibility and collaborative innovation typical of online settings, and needs further investigation to test its merits. It therefore was logical that an alternative design approach be given some consideration particularly since, as a field, learning design has no major educational philosophy (Smith & Ragan 1999). Silva & Breuleux (1994) and Seddon & Postlethwaite (2007) for example, describe the development of approaches to designing collaborative learning environments using a participatory process. But their approach is situated within the formal, institutionalised setting, and this served as sufficient justification of the merits of this research project as part of an exploration of design of wider online collaborative knowledge-building research. Consequently, my approach to learning design in the research context is one that is responsive to understanding collaborative knowledge-building and sharing in a prescriptive and process-oriented manner. This prescriptive approach is seen in the use of Activity-Oriented Design Methods in Chapter 5.

4.4 Conclusion: The Way Forward

In this chapter I described an approach that proved inadequate for gaining a meaningful perspective of the nature of the CEN. The design for learning approach was envisaged as a network-wide framework of synchronous CPD activities. This approach, however, needed to become something different. There were other aspects at play here, so a thoughtful plan of inquiry needed to be contemplated. While the intended outcome of this phase was not fully achieved, the process nevertheless opened up some avenues for further discussion. The process revealed

that in this context data collection should not be done in isolation from the network activity and participation that were taking place in the network. As a result, I needed to have a more meaningful approach to learning design, one that provided a comprehensive approach in order to acquire a deeper understanding of the research context. The approach used in this cycle afforded me the opportunity to experience first-hand the inadequacies of using conventional frameworks of analysis in a very complex and dynamic learning environment - showing the need for participatory design approaches. The experience motivated me to further explore the literature on learning designs in social networking settings. Additionally, I introduced activity theory analysis as a technique of interpreting the activity systems by describing the activity system under investigative focus. In view of this, it made sense to rephrase the research question to reflect the change of investigative focus. As my primary concern with membership interests limited my capacity to have this full picture, I present a methodological approach that is grounded in activity theory to provide a systemic view of the CEN. In the next chapter (Chapter 5) the focus of my attention will be on gaining a deeper understanding of the context, using a more comprehensive methodological approach.

5. Chapter 5

Developing a Deeper Understanding of the CEN – The Utility of the AODM Approach

Introduction

In the previous cycle (Chapter 4) I explored an approach that focused on gaining an insight into member CPD interest as a mediating artefact in designing a framework for wider synchronous knowledge-sharing activities in the network. My observations as participant and researcher revealed that there was much more going on in the network, and that instead of soliciting response from individuals, I needed to focus on adopting more rigorous online methods and tools that would allow me to capture a rich and deep perspective of the network. This thinking, however, required an analytical framework to guide the data collection and analysis. My search for a framework led to the exploration of the Activity-Oriented Design Methods (ADOM) (Mwanza 2002) as a set of consecutive steps in applying activity theory that could be applied in my research context (see Chapter 3 for an outline). In this chapter, therefore, I shall present the result of the application of the AODM, along with an activity systems analysis of the CEN. This chapter, consequently, builds on the argument for AODM as a design tool, and provides an account of its methodological utility in facilitating a deeper understanding of the network. The application of the AODM confirmed the shared object within the network and the discovery of tensions in the CEN activity system, and it assisted in the development of additional research questions and design decisions which will be reflected in cycle 3 (Chapter 6) and cycle 4 (Chapter 7) of the research project. I begin the next section, with an account of the planning that formed part of this research cycle.

5.1 Planning: The Action-Cycle Design Process

The Planning Context

Observation from cycle 1 (Chapter 4) exposed the need to focus on the network activity and member participation that occurred in the CEN, and the observation also revealed the methodological deficiencies of cycle 1. From the researcher's perspective, it appeared that activity and participation were central themes to the

development and sustainability of online collaborative knowledge-building environments; and that whilst membership interests formed an important part in understanding the context, the participation and the activities that composed part of the environment should not be ignored. Hence, attention should be given to participation and activity in the methodological inquiry. What this pointed to was a need to look at member participation and network activity as well as membership interest as key areas in the methodological inquiry. This conceptualisation of the dynamic relationship between member participation, network activity and membership interest is illustrated in **Figure 5.1** below. The diagram illustrates that in order to understand membership interest and characteristics, attention should be given to both member participation and network activity. I took these relationships into consideration in the methodology section that follows. Therefore, instead of soliciting a response from members, I needed to adopt methods that would allow me to observe member participation and network activity.

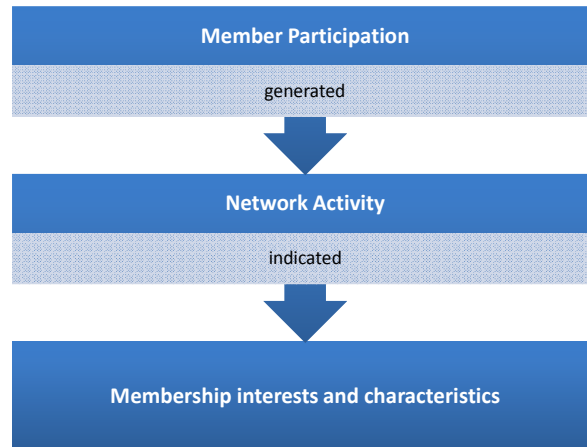


Figure 5.1 – Member participation, network activity and membership interests link

Analytical Framework

In this section, I focus on the method of analysing the data, given the methodological inquiry approach. The following sections portray the analytical framework for this cycle of the research project. It should be pointed out also that while I was engaged in the research activity I was developing research questions that would address the data collection process.

Objective

To explore the use of a number of internet inquiry methods, guided by the AODM, within an online informal social networking setting, so as to gain a comprehensive perspective of the nature of the CEN.

General Research Question:

What is the nature of a learning design approach for exploring a framework for mediating collaborative knowledge-building in the CEN?

Cycle 2 Research questions

Research plane

What is the nature of CEN?

-What are its membership, activities, and interests?

Design plane

How might the Activity-Oriented Design Methods be used to support an interpretation of the CEN activity system?

The methods of data collection

Drawing on the established analytical framework, I applied the Activity-Oriented Design Methods (AODM) as a way to facilitate a deeper understanding of the CEN design context. It followed then, that the AODM used in this research project served as an analytical lens, while at the same time it provided a comprehensive methodological framework to capture the relationships, activities and interactions within the CEN. Building on activity theory, methodological inquiry provided me a way of using AODM as a useful benchmarking tool to operationalise the data collection process and analysis. I utilised internet inquiry data collection methods, including the analysis of web traffic data, membership data from the network database, transcripts of synchronous and asynchronous communication, transcripts of communications between members in the network, and excerpts from my field journal. These methods, which are shown in **Table 5.1**, were introduced in Chapter 3.

Table 5.1 - Outline of plan for data collection and analysis for cycle 2

Research Question	Data	Methods of analysis	Timeframe
What is the nature of CEN?	Text	Descriptive analysis of Membership database, Observation: composition of CEN groups, Web traffic data: Google analytics Content analysis of asynchronous communication: field notes, discussion forum transcripts, RSS activity feed transcripts; field notes; Synchronous communication: Elluminate Live session transcripts, Instant Messaging Chat log	Mar 1 2009 to Jun 30 2009
How might Activity-Oriented Design Methods be used to support an interpretation of the CEN activity system?	Text	Content analysis of asynchronous communication: field notes, discussion forum transcripts, RSS activity feed transcripts; Field notes; Synchronous communication: Elluminate Live session transcripts, Instant Messaging Chat log	Mar 1 2009 to Jun 30 2009

In Chapter 3, I introduced the background for using the AODM as a methodological tool for operationalising activity theory. As stated in that chapter, (Mwanza 2002) described AODM as a way for designers to make sense of the context for design through the use of six stages and four methodological tool. These tools are

- (1) The Eight-Step-Model
- (2) The Activity Notation
- (3) The technique for Generating Research Questions
- (4) The technique for Mapping AODM Operational Processes

My purpose in the following section is to present an interpretation of the CEN using the Eight-Step-Model, and adapt the sequencing to help narrate the story in a coherent manner. Therefore, I plan to use the following arrangement in relating the story:

1. Community: What is the social environment in which [the] activity is being carried out?
2. Subject: Who is involved in carrying out the activities?
3. Activity: What is the activity of interest to the members?
4. Object: Why are the activities taking place?
5. Mediators: What are the tools, rules and roles that mediate these activities?
 - A. Tools: By what means are the subjects performing the activities?
 - B. Rules and regulations: Are there any cultural norms, rules or regulations governing the performance of the activities?
 - C. Division of Labour: When carrying out activities, who is responsible for what, and how are the roles organised?
6. Desired outcome: What is the desired outcome of activity on the network?

Activity systems analysis is historical in nature, and the relationship between the activity theory components can change over time (Kaptelinin & Nardi 2006). This developmental approach mandated that I adopt a method that spoke to the historically embedded nature of activity theory. I took this relationship between the activity theory components into perspective in deviating from Mwanza's sequencing, which started with activity. I therefore adopted a different approach to activity system analysis by focusing on what I thought deserved attention. I begin the analysis with a focus on 'community' rather than 'activity'. It appears that starting with community is an appropriate way of relating a coherent story. In utilising this approach I am making a case for understanding the socio-cultural context in which the activities are situated as a pre-cursor to understanding the activities that form part of the context. Further exploration of the AODM in similar settings may corroborate the need for adaptation which can add to the flexibility of the AODM as a tool in operationalising activity theory in design contexts.

5.2 Acting: Observing and Analysing Process

The Acting Context

In this section I take on the role of researcher by implementing the analytical framework guided by the AODM to gain deeper understanding of the CEN. I use the AODM as a methodological tool to simplify the application of activity theory in the research context and show its appropriateness as a method to capture a

comprehensive socio-cultural outlook of the CEN activity system. AODM has six stages:

- Stage 1. Interpret the situation being examined in terms of Activity Theory
- Stage 2. Model the situation being examined
- Stage 3. Decompose the situation
- Stage 4. Generate research questions
- Stage 5. Conduct a detailed investigation
- Stage 6. Interpret and communicate findings

(Mwanza 2002, p.190)

I begin with the first stage of the AODM: interpreting the situation being examined.

Interpreting the CEN (AODM Stage 1)

The data collection process in this stage was guided by the Eight-Step-Model (ESM) which, when interpreted and applied in the research context, served as questions for gathering data in this first stage. Human activity formed the unit of analysis within the network, and was investigated by following the questions as a guide. Some of the ESM questions were altered to suit the context. Despite this adjustment, the questions remained true to the original approach established by (Mwanza 2002).

Community: What is the social environment in which [the] activity is being carried out?

In this section, I depict the environment in which the knowledge-building and sharing activity was situated, by presenting data that defined community within that setting. I obtained this from observational data of the CEN groups as well as data from the CEN membership database.

In Chapter 2 I presented an account of the notion of learning in situated and distributed settings, and of how that defined the learning approach in this research setting. **Table 5.2** provides an illustration of the contrast between network and groups in the CEN

Table 5.2 - Members in groups within the CEN

Total members in groups	Total members in network	Number of Groups
167	601	18

Table 5.2 reveals the composition of the community versus that of the network of the CEN, where there are 601 members, but only 167 are members of the 18 groups within the CEN. Participation and activity varied from high to low, as shown in **Table 5.3**. As a feature of the CEN, threaded discussion forums existed in both the wider network and group setting.

Table 5.3 - Groups of the CEN.

Group	Description	No. of Members	No. of posts/discussions
Trinbago Educators	Group of teachers from Trinidad & Tobago	37	3 discussions ⁸ , 10 replies; 25 group wall postings.
Web 2.0 and Teaching	Dedicated to integrate, assess, and evaluate teaching practice using the web, video, VLEs	18	3 discussions, 2 replies; 19 group wall postings
Social Studies Educators	Group created for Primary and Secondary School Social Studies teachers	17	2 discussions, no reply
Educator Magazine	Our online annual magazine that highlights events, issues, research and teachers who make a difference	11	2 posts, 3 replies from 1 of these posts; 0 group wall postings
Francophonie	Pour encourager la collaboration parmi les professeurs de francais et nos collegues francophones des DOM de la region	11	0 discussions; 80 wall postings
WikiEducator	An evolving community intended for the collaborative planning of education projects and development of Open Educational Resources	9	1 discussion; 31 group wall postings
The Virtual Interactive Platform	A community-based learning environment for exploring media content	9	1 discussion, 2 replies; 6 group wall postings
Spelling B Users	Shares Spelling quizzes or games for use with students or for personal enhancement	8	2 discussions, 5 replies; 3 group wall postings
Caribbean Mathematics Teachers	A group for Caribbean teachers of mathematics to support one another and share or exchange ideas, lessons, best practices ...	8	3 discussions, 23 replies
English Teachers (Secondary)	None provided	6	1 discussion, 3 replies; 1 group wall posting
MSVU	Fosters discussion between MED students and the wider education community	6	2 discussions, 8 replies; 11

⁸ Discussions in this setting refer to posting threads of comments in group discussion forums.

			group wall postings.
Jamaican Teachers Abroad	Teachers trained in Jamaica but currently employed abroad	5	0 wall postings
SursumCorda	A forum for discussion among teachers, support staff and other support personnel of the school	5	2 discussions, 3 replies; 1 group wall posting
The Diversity of Learning	Accommodates the special needs of individuals - applies equally to the blind and deaf, the autistic and those with learning disabilities	4	2 discussions, 3 replies; 20 group wall postings
FASS Team	No Description Provided	4	1 discussion, 3 replies; 5 group wall postings
Measurement Evaluation and Statistics	This forum examines diverse human development issues. Key areas of interest include psychology, sociology and education	3	2 discussions, 13 replies
Caribbean Music Educators	Strives to ensure that every child is afforded an early education in music	3	0 discussions, 0 group wall postings
Technology education for forms 1-3	No Description Provided	3	

Table 5.3 – continued. 5 groups with 2 or fewer members were excluded from this sample.

From this data it can be interpreted that there were instances of low, moderate and high levels of activity, as summed up in **Table 5.4**. However, level of activity was not necessarily related to the number of members in the group. For example, the Social Studies Educator group comprised 17 members but its level of activity was low while the Diversity of Learning group had 4 members with a high level of activity.

Table 5.4 - the level of interaction in groups.

Group	Date Formed	No. of Members	Level of activity
The Diversity of Learning	22-May-09	4	High
Caribbean Mathematics Teachers	22-Mar-09	8	High
Web 2.0 and Teaching	13-Oct-08	18	High
Trinbago Educators	24-Mar-08	37	High
Francophonie	03-Mar-09	11	High
Wiki Educator	04-Jun-09	9	High
Measurement Evaluation and Statistics	22-Mar-09	3	moderate
Spelling B Users	31-Dec-08	8	Moderate
MSVU	10-Jan-09	6	Moderate
Educator Magazine	30-Oct-08	11	Low
Jamaican Teachers Abroad	14-Apr-09	5	Low
English Teachers (Secondary)	14-May-08	6	Low
SursumCorda	20-May-09	5	Low
FASS Team	07-Jan-09	4	Low
VIP	19-Mar-09	9	Low
Caribbean Music Educators	22-Mar-09	3	Low
Technology Education for forms 1-3	22-Apr-09	3	Low
Social Studies Educators	01-May-08	17	Low

Subject: Who is involved in carrying out the activities?

In this section, I focus on the characteristics of members of the CEN. Doing so allows one to have a clearer understanding of the demographics and composition that existed in the network from March 2008 to June 2009. To accomplish this task, I made use of the membership data from the network SQL database to produce descriptive analysis, using SPSS (analytical software). The subjects within the CEN activity system primarily comprised individuals with an interest in education.

Therefore members were defined by a unified domain of education. However, members were not a homogenous group. **Table 5.5** for example, shows the distribution of membership throughout the Caribbean. It can also be seen that some members were not from the Caribbean.

Table 5.5 - CEN membership by country

Country	N=511	Frequency	Percentage
Trinidad and Tobago		175	34.2
Jamaica		70	13.7
Barbados		47	9.2
Anguilla		36	7.0
United States		27	5.3
Saint Kitts and Nevis		23	4.5
Guyana		22	4.3
Saint Lucia		15	2.9
Antigua and Barbuda		14	2.7
Virgin Islands, British		13	2.5
Saint Vincent and the Grenadines		11	2.2
Dominica		6	1.2
United Kingdom		6	1.2
Belize		5	1.0
Bahamas		4	0.8
Canada		4	0.8
Grenada		4	0.8
Martinique		3	0.6
Bermuda		2	0.4
India		2	0.4
Mexico		2	0.4
Netherlands Antilles		2	0.4
Puerto Rico		2	0.4
Virgin Islands, U.S.		2	0.4
Cayman Islands		1	0.2
Dominican Republic		1	0.2
Guadeloupe		1	0.2
Montserrat		1	0.2
Saint Maarten		1	0.2
Other		9	1.8

Table 5.5 shows the CEN membership by country, Trinidad & Tobago being the largest country represented in the sample.

Table 5.6 – The gender composition of the sample

N=601	Frequency	Percentage
Female	412	68.6
Male	189	31.4

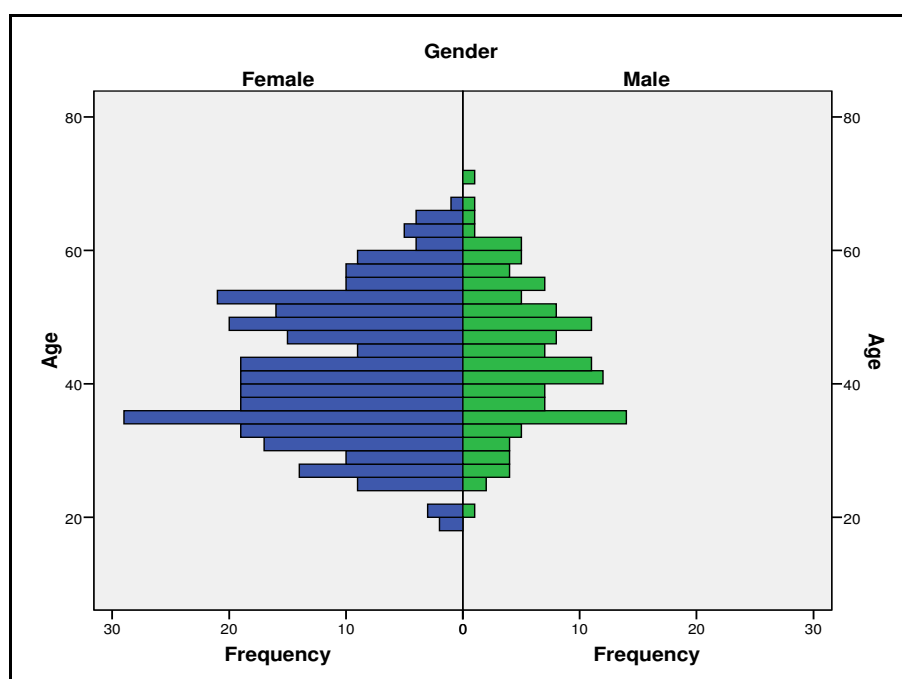


Figure 5.2 - Age/Gender distribution of membership

Tables 5.6 and **5.7** show the gender and age composition of the CEN membership. **Table 5.6**, for example, shows that the greater percentage (68.6%) of members were females, with males representing 31.4%. Membership within the CEN was open to any educator at any level. This distribution corresponds with **Figure 5.2** where age/gender distribution can be seen. However, **Table 5.8** indicates that greater network membership was represented by Secondary School (37.5%) with Special School as the lowest represented (1.6%).

Table 5.7 - Age data of the sample n=438

N= 438	Minimum	Maximum	Mean	Std. Deviation
Age	19	71	42.21	10.434

Interestingly, **Table 5.7** shows that membership age ranged from 19 to 63, with 42 being the average age of members, with females representing the predominant percentage.

Table 5.8 - Working environment of members

Work Environment	N=64	Frequency	Percent
Secondary School		24	37.5
Department of Education		9	14.1
Further /Higher Education		9	14.1
Primary School		9	14.1
Teacher education and training		7	10.9
further /Higher Education		3	4.7
Adult and Community-based learning		1	1.6
Nursery/pre-School		1	1.6
Special School		1	1.6

The CEN comprised individuals of varying interests and backgrounds in education. Membership data indicated that the network was fuelled by a predominantly female (68.6%), English speaking membership. However, a growing number of members were from French, Dutch and Spanish speaking Caribbean territories. One of the groups, (Francophonie), communicated exclusively in French. It seemed that French speaking educators from English speaking territories conversed with their francophone counterparts as a way to encourage the development of their language skill. An excerpt from the description of the group illustrates this practice:

“Pour encourager la collaboration parmi les professeurs de francais et nos collegues francophones des DOM de la region.”

Additionally, **Table 5.5** reveals that a substantial number of members were not located in the Caribbean. Most of these members seemed to be Caribbean nationals who were working or studying abroad. An excerpt from a case study conducted by a member of the CEN, supports this assumption:

“There are many teachers like myself who are pursuing higher education in the United States who are also members of the network. There are also Caribbean born [sic] and trained educators working abroad, such as the Jamaican Teachers Abroad.”

(CEN Member 2009)

This analysis provided a clear picture of the membership composition of the CEN. In the next section, I am going to focus on the activities that members engaged in, and that served as a basis for understanding the object or motivation to be treated three sections down.

Activity: What is the activity of interest to members?

In this section I use the question above and draw on a number of quantitative and qualitative strategies to analyse the actions and operations that formed part of the wider activity within the CEN activity system. This approach is in keeping with the notion of the operations and actions that are bounded within an activity (see Chapter 2). Leont'ev (1978) maintained that human activity is structured around three levels: (1) operations which are automated actions that are governed by conditions (2) conscious actions influenced by goals and (3) activity being governed by purpose. In order to make sense of the activity within the activity system, I focused on member operations and actions by looking at (a) visitor website traffic behaviour (operations) (b) asynchronous communicative actions, and (c) synchronous communicative actions.

Website Traffic/ Visitor Behaviour (Operations)

Using Google Analytics, I was able to analyse visitor traffic behaviour (see Chapter 3 for methodological implications) for the period March 2008 to May 2009. I present snapshots of web traffic data with the goal of describing the operations that led to member actions within the network.

New Versus Returning Visitors

Table 5.9 – Returning vs. New visitors to the network

Visitor Type	Visits	Pages/Visit
Returning Visitor	1923	0.596244
New Visitor	1617	0.403756

(March 2008 – March 2009)

Table 5.9 indicates that from March 2008 to May 2009 there were 1923 returning visitors to the site and 1617 new visitors – figures that can be regarded as representing a good measure of general activity. The amount of time spent is illustrated in **Figure 5.3** below, which records that the largest category of all visitors (30.93%) remained 1-10 seconds on average on the site. I suspect, though, that this category represents CEN members who were seeking to be updated on site activity, or perhaps those who visited for the first time and did not find the site useful to them. However, a substantial proportion (51.86%) of visitors spent between 61 to 1800 seconds (1 to 30 min). Quite interestingly, 7.34% of all visitors spent the longest amount of time on the site. There is uncertainty about what this reveals - hinting at the problem with data of this nature - but these are possibly visitors who logged in and navigated deeper into the structure of the site, as hinted by the data in **Figure 5.4**.

Length of Visit

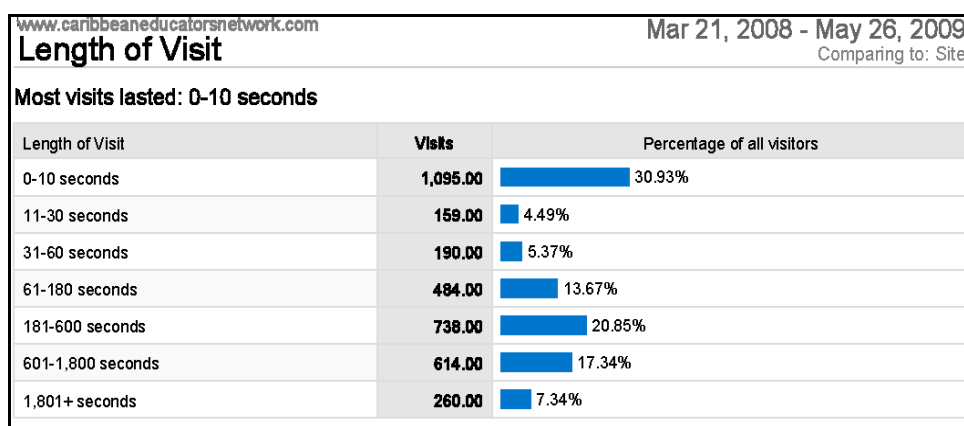


Figure 5.3 – Showing the average length of time visitors spend on the site.

Depth of Visit

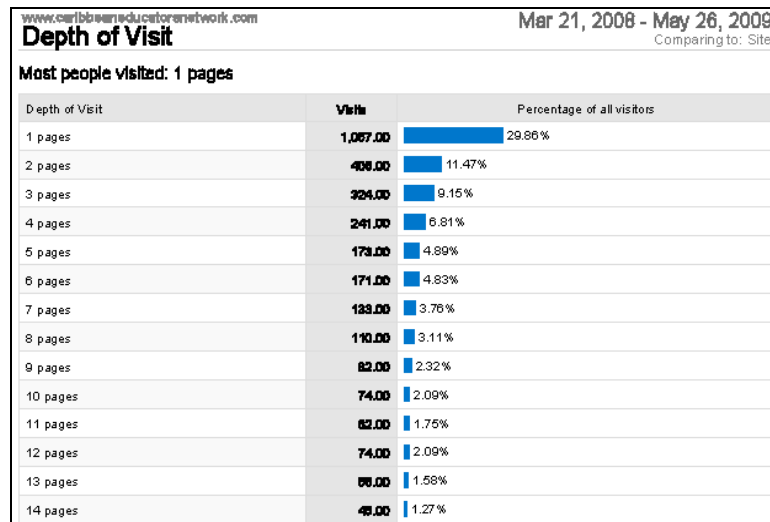


Figure 5.4 - Depth of visits on CEN

The data in **Figure 5.4** confirms what I suspected in **Figure 5.3**, in that the highest percentage (29.86%) of all visitors visited only the first page while, when combined, 27.43 % navigated 2-4 pages within the site. This represents CEN members, since only members are allowed beyond the first page. The CEN is a closed network, allowing only registered members to navigate beyond the first page a rule that can also account for the incidence of first page visits. This, however, is a limited view and points up the need to focus on a deeper navigational activity and patterns of activities. I share a deeper perspective in the next section by focusing on asynchronous and synchronous communicative actions that emanated from the network.

Asynchronous Communicative Actions

A number of asynchronous communicative actions made up part of the wider network activity. These included the use of, and were supported by, a number of tools (addressed later in the chapter) that facilitated the discussions in the network. My observation revealed that computer mediated dialogue comprised part of the basic structure of activity within the network group activity. These dialogic actions within the group implied other actions such as viewing and commenting on member

pages. The asynchronous communicative actions that took place within groups is described below using data from RSS feeds (see Chapter 3).

Asynchronous Group Actions

At the time when data was collected, the CEN consisted of 18 groups with specific interests and topics ranged from country specific interests to subject area themes.

Table 5.3 (above) provides an insight into group discussion activity. The exact nature of the dialogic activity is revealed in the next section through analysis of RSS feeds (see Chapter 3 for description)

RSS Feeds

As this is an exploration in its natural setting, I used an unstructured observation approach to proffer an account of the RSS feeds for April 12, May 02 and June 15 2009. These dates were purposively sampled because they represented the highest RSS activity count compared to other days of the month. **Figures 5.4 - Figure 5.8** show the results. **Figure 5.8** shows the average of RSS feed activity for the three days in April, May and June 2009.

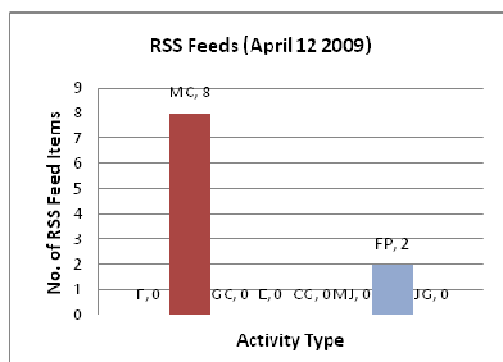


Figure 5.5-RSS Feeds for April 12, 2009

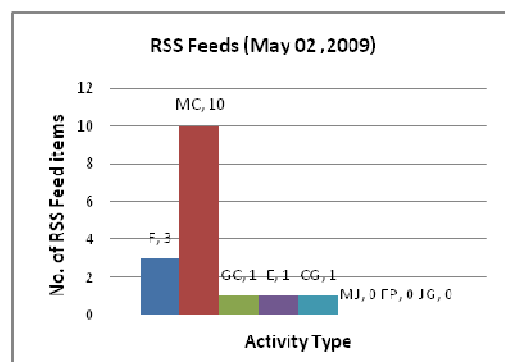


Figure 5.6-RSS Feeds for May 02, 2009

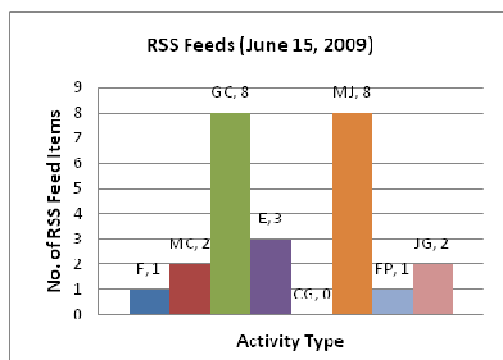


Figure 5.7-RSS Feeds for June 15, 2009

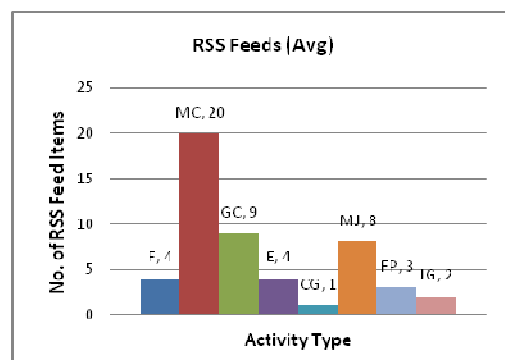


Figure 5.8-Average RSS Feeds

Table 5.10 - Key for interpreting Figure 5.4-5.7

Code	Meaning	Code	Meaning
F	'Friending' (Friending is an informal befriending process of individuals in social networks.)	CG	Created new Group
MC	Comment on member page	MJ	New Members announcement
GC	Comment in group discussion	FP	Featured member profile
E	Taking part in event	JG	Joined Group

The data presented shows that commenting on member pages (MC) and commenting in group discussions (GC) were the most popular activities. However, RSS activities on 15 June 2009 revealed that a wider range of activities emanated from the network than the other days. The content of membership dialogue, on further observation revealed the need for presenting data to illuminate the dialogic comment made by members. On another level, this data pointed to the object within the activity system - but this is to be addressed later - in the section of the

chapter dealing with the reason for the activities. Now I shall focus attention on synchronous network activity.

Synchronous Actions

In this section, I move from network asynchronous communicative actions to synchronous communicative actions that formed part of the activities of network members. The synchronous communicative actions focused on the events hosted by the CEN, using Elluminate Live. Elluminate Live is a tool that facilitates live meetings and is introduced later in this chapter in the section on tools. I provided this tool to members so that they could conduct and participate in live sessions around their various interests. Elluminate Live provided the meeting space and tools for members to interact in real-time with audio, video, text messaging and sharing of applications. Although Elluminate Live was made accessible to all members of the network, its use was within a situated small group setting. The activities at this level, however, were accepted as my intervention as learning designer in an effort to guide the development of an online CPD approach. **Table 5.11** lists the topics that formed part of synchronous sessions.

Table 5.11 – A listing of sessions conducted in Elluminate Live

Date	Session title	Duration	Attendees
14 th March 2009	Testing of room and features	02:25:57	11
21 st March 2009	First Live session of the CEN	02:28:08	21
4 th April 2009	Introduction to Moodle	02:01:57	12
18 th April 2009	Connectivism (guest–George Siemens)	02:10:39	12
9 th May 2009	VIP Demo (guest–Quang Luong)	01:33:08	12
20 th June 2009	Reflective workshop	01:25:04	6

These sessions, held on Saturday evenings at 7:30 p.m. Eastern Caribbean time, were moderated by one or two individuals. One of the participants of the first official live session shared her reflections with the group:

Today is the first anniversary of CEN. It was marked by an online discussion of many matters, with a view to determining the way forward. Several areas of interest arose: developing strategies to get teachers involved with technology, teacher education in the Caribbean, professional development in the region,

teacher induction in the region. I experienced a shut down so I missed some of Ali's remarks on pre-service education. My guess is that she was speaking about the Teacher Education program at [my country]. What I learned from this talk is that we have much to consider with respect to teacher education and professional development in the Caribbean. I am not certain that there is a widespread consciousness (I can speak for [my country]) of teaching as a profession. Are we reflecting on the way we practice our craft in the Caribbean? Do we take responsibility to develop ourselves professionally? What motivated me to ask myself these questions was seeing my personal physician update himself every year at a conference in his field. I began to question my own development as a professional instead of a technician. That was what I did – I was a technician. I disseminated information so that students can pass an exam; but was meaningful inquiry and critical thinking occurring in my classroom? I am ashamed to say that it was not. Obtaining good passes at CXC was not sufficient anymore because as the years progressed, I faced many more challenging students who struggled with mathematical thinking. Simply teaching to the test was not going to be enough. I challenge all of us to reflect on what we are doing today. The way we were taught (rote learning) is no longer applicable.

(CEN Member, 2009)

The live discussions focused on issues ranging from theory to classroom practice, and provided the impetus for further meetings and activities.

Thus far I have focused on the community, the subjects and the activity that formed part of the CEN. However, the shared object of activity to members remained unclear up to this stage. I was not certain if the shared object of activity within the CEN was a focus on CPD or collaborative knowledge-building. What I can say is that members were using synchronous and asynchronous actions that included (1) informal learning, (2) sharing of ideas and practices and content, (3) commenting on member activities and (4) responding to member and group interests and questions. These actions pointed towards the need for more of a collaborative knowledge-building activity as part of a personal CPD agenda. The results of the analysis of member activities convinced me that I needed to rethink my interest in developing a CPD framework as the main learning design object to supporting collaborative knowledge-building as the unifying objective within the network. This assumption will be made clearer in the next section on object.

Object: Why is the activity taking place?

While activity theory advocates the idea of object-oriented activity, there is contention about the definition of object in the literature. Some see the object primarily as providing the motive (Leont'ev 1978), while others see it as the problem space (Engeström 1987) that feeds activity. In extending the object

metaphor Kaptelinin & Nardi (2006) propose object as imparting meaning to the activity for people. Despite these differing opinions, most agree that an objectless activity is impossible. Consequently, the object is what provides motivation (Leont'ev 1978), meaning (Kaptelinin 1994), and problem space (Engeström 1987). Thus the object is seen as activity in its entirety, embedded in the subject-object link as a way of understanding unified development (of both subject and object) (Kaptelinin & Nardi 2006). Engeström (1995) contends that objects should not be confused with goals in that goals are relatively short-lived and are finite aims of individual action. On the contrary, the object of activity goes beyond temporary goals and is the constantly reproduced rationale or determination in the collective activity system which goes on to define goals (Leont'ev 1978; Engeström 1995; Engeström 2004). This process is represented by **Figure 5.9** where the object is represented as a circle. This conceptualisation leans on the illustration offered by Hardman (2005), where the circle represents a space of dynamic fluidity. The transformation in the diagram is the meaning-making process that is required to meet the desired outcome. Consequently, subjects and objects, like the other unifying components of the activity system, are inseparable from each other.

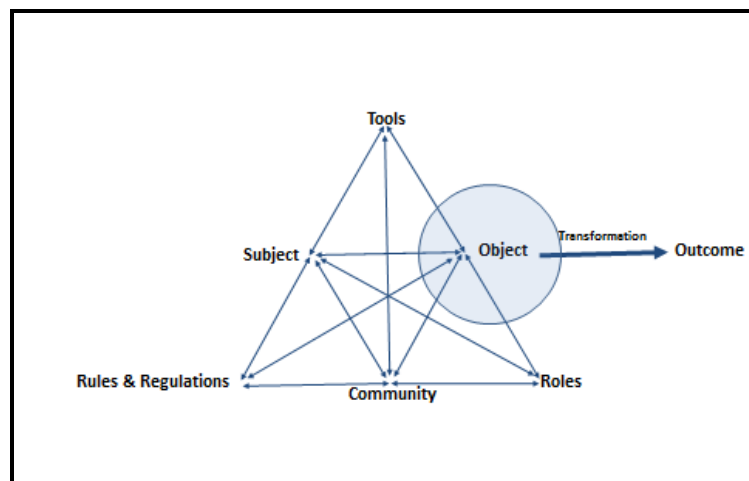


Figure 5.9 - Object as problem or working space

Therefore, in this section, in making sense of the object I drew on data from the CEN membership database and focused on the motive for the activity, in an attempt to confirm collaborative-knowledge building as the shared object within the CEN. I collated the statements (n=67) from the membership database that responded to the question, 'Why did you join CEN?' Members responded to this question as part of

the network sign-up and member profile process. Besides being collected in the CEN membership database, the responses were also displayed on members' profile pages (see **Figure 5.10** for a sample). Since this data formed part of the membership database, I was able to extract the 67 responses. Membership at the time stood at 601, but only 67 members responded to this particular question which focused on the motive for joining the CEN.

Profile Information

Your working environment would most likely be categorised as
Department of Education

Please suggest at least 3 areas/topics that you are interested in?
identity and belonging, youth and youth voice, teacher education

Why did you join the CEN network?
To connect with a network of thinkers whose work relates to and is informed by their Caribbean identity.

About Me:
Doctoral candidate in International Education Policy at the University of [redacted]
[redacted]. My dissertation research examines issues of [redacted] and belonging from the perspective of secondary school teachers in [redacted]

My Views on Education (Your Philosophy)
"Many people just do what they do with no particular passion or commitment to it... others genuinely love what they do; would probably do it for free if they had to, and can't imagine doing anything else. Understanding what makes the difference is essential for transforming education to meet the real challenges of the twenty-first century." - Sir Ken Robinson

"This is a learning and research community and at times information is shared with one another on the network. By joining this network you give your consent to use your information as part of the development of the community and for research conducted by members of the network. Please note that this is a closed community. As such your data and information is protected and viewed only by members of the network. All attempts should be made to conceal your identity if specific user data is used. Do you understand this statement?"
Yes

Figure 5.10 - Profile page of a CEN member

The data from the database was imported into qualitative analysis software, Atlas.ti, (see Chapter 3 for description of software) where it was coded for meaning. I coded the responses by using an open coding technique that adhered to the methodological principles outlined in Chapter 3. **Table 5.12** shows the result of this coding activity; the individual motivation for joining the CEN is categorised by the responses provided.

Table 5.12 - Frequency of coded objective statements

CODE	n=67	Frequency
To learn from Colleagues		26
To share ideas with colleagues		19
To network with colleagues		18
To interact with colleagues		7
Was invited		7
To collaborate with colleagues		5
To meet colleagues		4
To belong		3
To communicate with colleagues		2
To socialize with colleagues		2
CPD		1
To discuss issues		1
To encourage		1
To motivate others		1
To volunteer		1
Was class project		1
Was curious		1

An analysis of **Table 5.12** reveals that 'to learn from colleagues', 'to share idea with colleagues', and 'To network with colleagues' were the popular reasons offered for joining the network. **Table 5.13** provides an insight into the way the statements were coded.

Table 5.13 – Example of statements

Code Category	Coded Statements
To Learn from Colleagues	To learn from my colleagues; To share my ideas; To create friendships; To be 'au courant' with the new education trends; To gain 3-dimensional picture of the higher education system here; To learn about education and other activities in the Caribbean; So that I would hear the views of individuals involved in education, thereby broadening my horizons; To meet [and] learn more about education from more experienced teachers than myself; Keep abreast of what is happening back in the Commonwealth of Dominica; To be ready to learn and get experience and I also like to join the CEN network; I am a retired teacher educator and administrator; This is one way of keeping up with current developments; To network & learn from others

To share ideas with colleagues	I may be able to help and [give] advice, if needed, on a shorter term or virtually; To be afforded the opportunity to share and make use of academic capital resident within that community; To share and interact with colleagues; I am retired and interested in doing volunteer work; To learn and to share information
To network with colleagues	To make linkages with other Caribbean educators; For networking with the fellow teachers in the Caribbean Region; I would like to connect to other Caribbean educators; I hope to make contacts with whom I could exchange useful experiences; To network, share and learn in order to better equip myself in becoming an expert educator

The data in **Table 5.13** reveals that the major factors that motivated individuals to join the CEN included the need to learn, share ideas, interact, network and collaborate with others of similar interests and background, though learning from and sharing with one another was the overwhelming motivation. Collaborative knowledge-building and sharing therefore was identified as the shared object within the network. Although unified by this shared object, the CEN was a complex activity system of nested activity systems with specific object-oriented activities that operated in relation to one another.

Mediating the Activity

The following section focuses on the tools, rules and roles that mediated the activities within the CEN. I shall begin by looking at the tools that formed part of the CEN activity system. Some of these tools were used in different ways by members. I shall therefore provide a snapshot of the technological and social tools that constituted part of the network.

Tools: By what means are the subjects performing the activity?

In this section I shall present a number of tools that members used to perform the collaborative knowledge-building and sharing activity. The discussion starts off with

a description of NING, the web social networking platform that the other tools build upon.

NING

NING, a social networking platform that hosts the CEN, competes with large social networks like MySpace and Facebook. However, NING's advantages render it attractive to users. It enables individuals to create their own social network around specific interests with their own visual design or display settings, and it also provides a functionality that enables users to create specific groups, upload video and photo, schedule and promote events and create customized pages. As in other social networking platforms, the collaboration and communication in the NING platform revolved around comments on member pages and in discussion forums, and this was also supported by the RSS data displayed in **Figure 5.5 – 5.8**. The functionalities NING provides include an event organiser, which makes planning events less daunting. Once an event is planned, individuals can be invited to attend. These can be from the general membership of the network, or from the list(s) of followers, or of colleagues who created the event. The event planning tool also makes it possible to monitor the number of tentative attendees of the event. NING also makes it possible to use a number of external 'widgets': devices to execute applications and solutions that were not provided within the NING platform. These include, for example, games, music player, and file manager. Therefore, members could customize their member page by installing additional 'widgets' on their membership page. **Figure 5.11** provides an illustration of the CEN front page which features some of the functionalities of the NING platform.



Figure 5.11 – A snapshot of CEN in NING

Illuminate Live

Earlier in Chapter 1, I introduced Illuminate Live as a tool used by the CEN members to conduct synchronous meetings. Illuminate Live is an e-learning solution and collaboration software that makes it possible for members to participate in live (synchronous) sessions. The use of Illuminate Live was made possible through sponsorship provided by Illuminate, the company that developed the software. Thanks to this provision, members of the CEN had the use of an Illuminate Live room for an entire year. The software was developed on Java technology, and provides a means by which members can share and participate in an online meeting room where they can do a number of activities that include audio and video broadcasts, whiteboard presentations sharing of applications, and polling. Using this tool, members of the CEN were able to successfully take part in a number of live sessions. Six of these sessions (between March 2009, to June 2009) are listed in **Table 5.11**.

Discussion Forum

Threaded discussions were identified earlier in the section on community. However, as a tool within the NING platform, threaded forums served as the most commonly used tool within the network. The Caribbean Mathematics Teachers group, for example, had three threaded discussion forums: FYI, Food for MORE Thought and Constructivist Mathematics, which are shown in **Figure 5.12** below. Additionally, **Table 5.14** provides a detailed listing of the discussions within the groups in CEN.



Figure 5.12 - The discussions in a group.

Table 5.14 - The discussion topics within Groups

Group	Discussion Topics
Educator Magazine	Magazine format (0 Replies) Reflections (3 Replies)
Jamaican Teachers Abroad	0
Measurement Evaluation and Statistics	Statistics, Evaluation and Research (11 Replies) Re: Microsoft Office Applications (2 Replies)
The Diversity of Learning	Which part of video do you need help with now? (1 Reply) How the Brain Works (2 Replies)
Spelling B Users	this is a popular email message (1 Reply) How not to teach spelling (3 Replies) Practice (2 Replies)
Caribbean Mathematics Teachers	Constructivist Mathematics (12 Replies) FYI (11 replies) Food for MORE Thought (0 Replies)
Social Studies Educators	Some possible areas of collaboration (1 Reply) Collaboration Social Studies and Art History (0 Replies)
English Teachers (Secondary)	Improving the delivery of comprehension skills to our students making the transition from primary to secondary school (3 Replies)
Web 2.0 and Teaching	Twitter anyone? (0 Replies) Visionary Leaders Institute (0 Replies) VLE demo (2 Replies)
SursumCorda	new group members (2 Replies) new person (1 Reply)

Trinbago Educators	On becoming a teacher (3 Replies) Interesting article (6 Replies) The Question of Ash Wednesday!!! (1 Reply)
FASS Team	Moving AHEAD (3 Replies)
MSVU	Conversations on Saturdays (3 Replies) Leadership (5 Replies)
Francophonie	0
VIP	VIP login (2 Replies)
Wiki Educator	Government Policies and Education (0 Replies)
Caribbean Music Educators	0
Technology Education for forms 1-3	0

Media sharing

Media sharing is a prominent part of the NING social networking platform. Videos and photos constituted the major part of this media sharing component of the social networking platform. At the time when data was collected, the CEN consisted of a total of 263 photos shared by 46 members, and 41 videos shared by 7 members, which made up the media sharing aspect of the network. The photos appeared to signify varied interest, ranging from videos embedded from YouTube to uploaded videos focusing on topics like action research. More members shared photos than videos. These photos and videos were also shared by individual members who were not part of any group. Most of the photos depicted student work (particularly arts and craft), teacher graduation, workshops, and vacation settings, while most of the videos illustrated topics related to professional development.

Rules and Regulations: Are there any cultural norms, rules or regulations governing the performance of the activities?

In general, the CEN operated on the premise of self-governance, and it appeared that there were not many explicit rules and regulations governing the way members interacted in the network. However, one explicit rule or regulation was found in the welcome on the main page of the site. It was placed there as a reminder of the expectation of professional conduct:

“Welcome colleague. Thank you for joining Caribbean Educators Network. This is our very own social network. Begin by introducing yourself in the Hail Up Forum. We have very few rules for being here. The biggest one is being respectful!”

Further observation revealed that there was an unstated code of conduct that I perceived as being built on mutual respect and collegial support. The very nature of discussions and the form of address used were testament to the existence of a professional culture and code of conduct. As network creator and administrator, I exercised control over how operations were performed within the network. The effect of this was that my action translated into a degree of regulation. This administrative control, however, was not done arbitrarily but evolved with the development of, and activity in the network. Therefore, my interventions formed part of the process of shaping the network into a suitable and non-threatening environment for all members. There were instances, for example, when I had to ban individuals from the network for using it to spam users. Out of the general membership of 601 members, I had to ban five members for posting inappropriate content on member pages in the network. The inappropriate content included advertisements for over-the-counter drugs, and invitations to join internet dating sites, to name a few. Moreover, as one of the moderators of the Elluminate Live sessions, I had to adhere to the guidelines set out by the sponsor (Elluminate). Hence, before each session, I had to highlight the features of the tool, and to ensure that some announcement was made about the sponsorship. Additionally, moderators established the practice of encouraging members to adopt a professional tone during live sessions, particularly since it was recorded for later viewing by other CEN members. Participants were informed that all communication in the chat room was seen by moderators and, therefore, it behoved them to act professionally at all times. Following is a list of guidelines/regulations of the network:

- Members are required to login to access the network.
- Members are required to adhere to the code of professional language and conduct
- Interests and topics are skewed towards varied education interests
- Inappropriate content is banned from this network.
- Participants are required to conduct themselves professionally during live sessions.
- Members are reminded of professional conduct in the welcome message on the front page of the network.
- Group initiators and moderators express how they would like their group to function

Division of labour: When carrying out activity, who is responsible for what, and how are those roles organised?

As the network creator, my role and participation in the network were prominent. I assumed full administrative rights and made changes in the design and layout of the network environment. My activities however were guided by member feedback, requests, and observation of the participation in activities. The most visible of the other roles, such as moderator, greeter and group initiator will be discussed in the following section. I begin with the greeters:

Greeters

The greeter role is a CEN-wide role that emerged from of the greeting activities of members, and later comprised a formal part of the network structure. Various users performed the greeting role within the network. A pattern evolved of members welcoming or greeting new members who had accepted their invitation to join the network. There were also other members who actively sought out new members to greet them. Members would welcome new members and invite them to take part in the activities. During an Elluminate Live session on March 21 2009, the role was formalised when five members volunteered to serve as official greeters of the CEN. Subsequently their role was recognised on the front page of the network as greeters. **Figure 5.13** provides a snapshot of the group of volunteers greeters of the network.

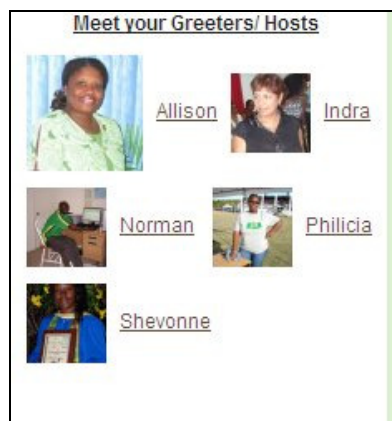


Figure 5.13 - Snapshot of the greeters.

Group initiator

The role of group initiator, like the greeter, emerged over time. Some members initiated (created) groups of interests, and in the CEN setting they were referred to as group initiators. Following the creation of a group, the group initiator actively sought to link up with others who had similar interests by inviting and encouraging other members to join their groups. Group initiators had the administrative rights to

- Send a message to the group
- delete the group
- Manage group members
- Promote members to the position of administrators, as well as demote them
- Suspend members from a group

Generally, group initiators used a variety of approaches to mediate the discussions within the group. **Figure 5.14** shows the composition of group initiators in the CEN. There were 12 group initiators, with Alli (member 224) and LeRoy (member 1) both having created 4 groups with varying numbers of members. Anne (member 3) created only one group but this group had the greatest number of members (37). The rest of the group initiators also created 1 group each, ranging from 9 to 3 in membership size.

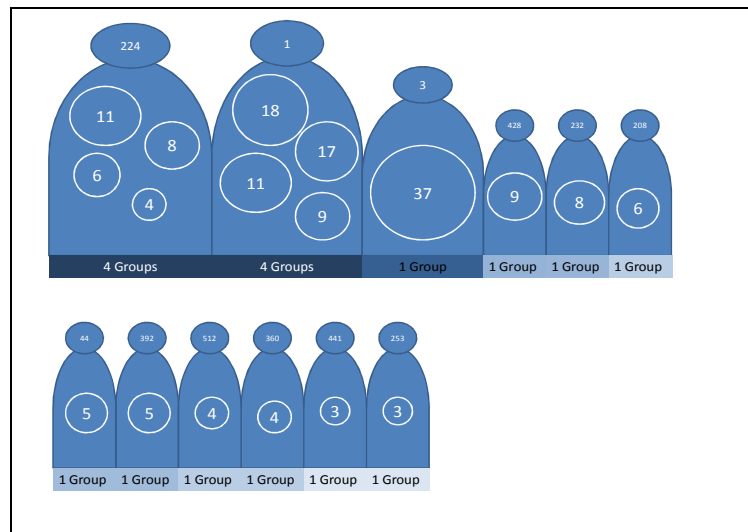


Figure 5.14 - Group initiators with the number of groups created

Desired outcome: What is the desired outcome of activity on the network?

While there is some contention about the manner in which the concepts of object and outcome are represented in activity theory research, in this research setting I reinforce the notion of object as being the problem space (Engeström 1987). I refer to the object as the working space that is intricately linked to the activity in the network, while the outcome is the broader anticipated end product that serves as the motivation for the object to move forward. It is therefore fitting to expand the notion of outcome as an intent or desire within the activity system as suggested in Mwanza's (2002) interpretation. To this end, collaborative knowledge-building as the problem space provides motivation for a wider intention which suggests transformation of the object into the desired outcome. Collaborative knowledge-building as the object implies that the outcome should be seen as something that stimulates the problem space. This further suggests the need for sustaining the object to achieve the desired outcome.

I chose to focus on the probabilistic and intrinsic value and purpose that this shared object of collaborative knowledge-building offered within the network. Sustainability also hinted at the intention of creating a framework to support collaborative knowledge-building in the network. Therefore, as a way of showcasing the desired outcome, in this section I shall focus on how the collaborative knowledge-building activity was valued by members. To anticipate the outcome in the research setting, I am therefore relying on the evaluative statements and judgements provided by members. In light of this, I present samples of dialogue between members of the network, which include transcripts of email communication, and transcripts of synchronous sessions. I begin with a value statement from my position of network creator in a response I presented to a member who wanted to know my motivation for creating the network:

I created the network in March 2008 with the hope of addressing the need of bringing educators together for [professional development], communication and sharing of ideas. As an educator for 13 years I have seen the benefit of informal education and thought that others would do as well. When I came to The [University of Nottingham] in September of 2008, I had no intention of looking at the network the way I do now - it has evolved into something that has changed my programme of study. The network itself supercedes any theoretical base - it is more of a practical goal for us in the Caribbean. However, it [lends] itself easily to...action research as a means of a developmental/intervention study. I can see the amount of enthusiasm that it

creates because it is not [just] an experiment...it is a real network, with real teachers [and] real issues, and will continue to be so even after we finish studying. Our contribution will be engraved [on] the network culture to be something that others can benefit from.

(LeRoy Hill, Communication to CEN member, March 26, 2009)

Although this communication was not guided by any theoretical model or framework, the dialogue reveals an embryonic representation of an activity system. For example, we can identify the **activity** (communicating and sharing informal knowledge), the **subject** (the educator/CEN member), **the tool** (the network), and the **community** (Caribbean Educators, CEN members). Certainly, the activity system being dynamic and complex, has undergone a number of changes. However, the initial idea of sharing knowledge in an online setting was shared by most members. Therefore, although different activity systems existed within this setting, they seemed to identify with the shared **object** of collaborative knowledge-building. The following testimonials from the online questionnaire (n=13) from cycle 1 helped me in interpreting the outcome of the network activity. When asked, 'What value do you get from being part of CEN'? The following responses were offered:

- (a) Networking with other teachers/educators. I find it to be a forum where teachers can express [their] views and meet other teachers.
- (b) I can communicate with teachers and get ideas about education.
- (c) Personal growth and fulfilment. Opportunity to see my colleagues grow is my pleasure
- (d) The opportunity to interact with professionals from the Caribbean. I have learnt a lot and I hope this is the beginning of the reforms we can influence in Teacher Education in the Caribbean
- (e) I get to learn and share with fellow teachers from around the region.
- (f) Really great value. The Francophonie group has allowed me to get current reviews of life in Martinique that I can use in my classroom. I'm even in the process of planning a class trip with the help of persons from the group.
- (g) A sense of knowing that we as educators [are] a forum that can bring about change feels great.
- (h) Liaising with Caribbean teachers.
- (i) Professional development. My learning has been enriched.
- (j) Being part of a community of educators from the Caribbean region.

(Responses to item from online questionnaire on the benefits of CEN)

The statements above underscored the value of the CEN to the respondents. For example, responses (a) and (h) showed the object of networking as an important value for these individuals, while the object of learning and

knowledge sharing was seen in responses (c), (d), (e) and (i). Being part of a community of educators was also seen as an object in (g) and (j). I wanted also to get an idea of the desired outcome within the asynchronous setting, and therefore decided to capture the dialogic exchanges of an active member. After careful observation, I thought that Alli (member ID 224) was an appropriate subject of focus. The initiator of four groups (see **Figure 5.14**), he received comments from individuals on a wide range of issues. In this first instance, one of his colleagues posted a comment on Alli's page which indicated a desire to be part of this community.

Alli, I have longed for a forum like this. I never knew this existed for Caribbean educators. There is so much to discuss and debate. It is a great release valve - a lot to learn and share. I cannot wait to continue with the conversations.

(Comment Alli's Member Page, 11 March 2009)

Here Alli shared his excitement about the role of CEN in professional development:

The CEN has crossed another frontier with this group. Special Education expertise is rare in [my country] and perhaps in the region as a whole. I hope we all benefit. I am particularly interested at this moment in any information on epilepsy and EBD that can help teachers at the secondary level. Hope to get help or suggestions soon.

(The Diversity of Learning group, May 22, 2009)

A closer look at the responses above supports the need for sustaining the object of collaborative knowledge-building as a way to achieve the desired outcome. Although members collaborated and shared knowledge with one another, the collaborative knowledge-building remained an activity performed at varying degrees and intervals by a small number of members and groups. This can be gathered from **Table 5.2**, for example, which shows that the membership of the groups represent 167 represent 28% of the entire CEN membership. This situation needed further investigation to understand the type of approaches that could improve greater membership involvement in collaborative knowledge-building within the CEN. Although this discussion is by no means exhaustive there is, nevertheless, some indication that collaborative knowledge-building activity provides positive outcomes for CEN members and, from a design perspective, motivated my interest in finding a way of sustaining collaborative knowledge-building within the network. Further exploration on a micro scale might reveal the sort of actions and operations that made for more sustained collaborative

knowledge-building in groups. Before presenting this exploration, in the next section I outline a model of the activity system - the second stage of the AODM.

Modelling the CEN (AODM Stage 2)

Below is a presentation of an activity theory model of the CEN collaborative knowledge-building activity system. I present a multiple plane activity system as a way of conveying the dynamism and the connectedness that existed within and between the activity systems.

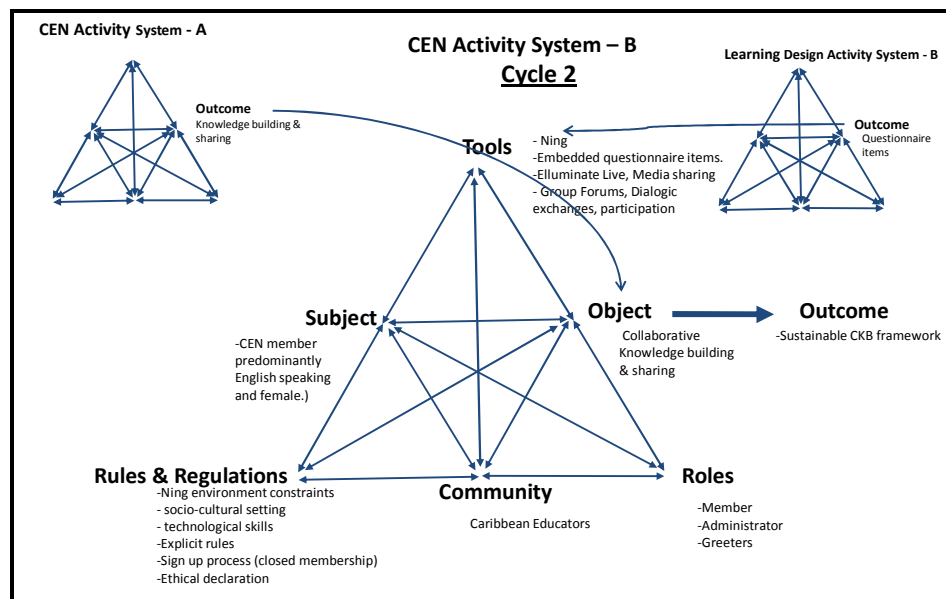


Figure 5.15 - CEN Activity System – B

Three activity systems interact in **Figure 5.15**, where the present activity system (CEN Activity System–B) is being influenced by two activity systems: the Learning Design Activity System-B (top right) and the CEN Activity System-A (top Left). This reveals systemic transformation from a focus on CPD to a focus on collaborative knowledge-building and sharing (in the CEN Activity System-A). The **outcome** of the CEN activity system–A therefore becomes a new **object** in the present activity system (CEN activity system–B), and this transformed **object** in turn show up the need for a sustainable approach to collaborative knowledge-building in the network. Likewise the **outcome** of the learning activity system-B (see Chapter 4) becomes part of the tools that mediate the activity in the present activity system. This added **tool** (online questionnaire items) is embedded in the CEN sign-up process.

Decompose the Activity System and generate research questions (AODM Stages 3 & 4)

Using the information collected from stage 1 supported by the modelling of the activity system at stage 2, I shall now focus on decomposing the activity system (stage 3) and constructing research questions (stage 4). The theoretical application of this stage, described in Chapter 3, provided me with an approach which juxtaposed the components and allowed me to identify the relationships that existed between the activity theory components. The following research questions were a result of this process:

1. What tools (processes) do members of CEN use to achieve collaborative knowledge-building and sharing and how are they used?
2. What constraints/rules (presences, conditions) affect the way in which individual members are able to perform collaborative knowledge-building activities?
3. How does the division of labour (presences, conditions) influence the way in which individual members achieve collaborative knowledge-building?
4. How do the tools (processes) in use affect the way CEN groups achieve collaborative knowledge-building?
5. What rules (presences, conditions) affect the way CEN groups satisfy collaborative knowledge-building and how are they applied?
6. How does the division of labour (presences, conditions) affect/influence the way CEN groups achieve sustainable collaborative knowledge-building?

Questions 1-3 related to individual members, while questions 4-6 relate to groups within the CEN. The decomposition of the activity system was a useful activity since it confirmed the need to explore interest in the processes and presences as mediators of the collaborative knowledge-building and sharing activity within the CEN. To this end, I decided that a focus on the processes and presences influencing the way members collaboratively built knowledge in the group setting would serve as the ideal exploration at the next stage of the research process. This suggested the need for a framework for facilitating collaborative knowledge-building in groups and, consequently, led me to explore four CEN groups in order to identify the conditions and processes used to facilitate collaborative knowledge-building.

Conduct a detailed investigation (AODM Stage 5)

Detailed investigation in this stage took the form of an initial exploration of the processes and presences in CEN groups, the upshot of which was the adoption of an approach to coding and analysis of asynchronous dialogic exchanges in four CEN groups. Using the group data from **Table 5.3** and **Table 5.4**, I chose four groups with the highest instances of group discussions (The Diversity of Learning, Caribbean Mathematics Teachers, Web 2.0 & Teaching and the Trinbago Educators). These discussions were then imported into Atlas.ti for coding and analysis. I used each message posted by group members as the coding unit. Using an open coding approach (see Chapter 3), I explored the data and coded each message unit in words and key phrases according to its meaning. The primary purpose of this activity was to draw attention to the processes and presences from these groups. As this was an exploration in context, these processes and presences were inductively derived from the data. I repeated the coding process three times. **Table 5.15** shows the outcome of this process.

Table 5.15 - Average coding outcomes after coding sessions 3 times.

Code	Frequency (Avg)
Seeking comment	16
Critical dialog & questioning	14
Requesting knowledge sharing & dialogue	14
Personal references and examples	11
Reflective statement	11
Share resource	8
Commendation	7
Posing questions	7

See Appendix 8 for full listing

The frequency of particular codes indicates their significance to the group activity. The tag cloud (**Figure 5.16**) builds on the data from **Table 5.15** where the scale of the codes, 'requesting knowledge sharing & dialogue'; 'Seeking comment'; and critical dialogue and questioning,' is bigger when compared to the other codes.



To exemplify the 3 most popular codes, I provide short examples of statements that were coded into these categories:

Requesting knowledge sharing & Dialogue

043: I would be most interested in the results you find. **056:** A definition of Special Education might be a good place to start. **074:** There is also math disability--dyscalculia, ...Are these issues in your school?

123: I would like to hear about the actual problems you are encountering. Then I can hypothesize about the neuropsychological causes and suggest solutions.

155: Could you please elaborate on the use of excel? Maybe suggested website(s)?

Seeking Comment

158: How much of the problem in algebra would still exist if arithmetic were made invisible? **087:** [this is the]recording chart.doc Epilepsy monitoring chart. **090:** I am further curious about your statement on epilepsy since a self-managed epileptic once told me that medication is not the way to go rather it is more useful to document and try to work out the trigger for the seizures.

Critical dialogue and questioning

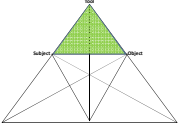
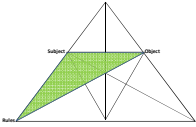
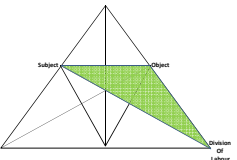
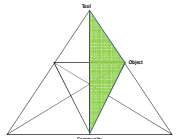
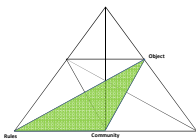
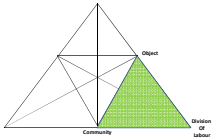
126: Is it Dr B. that there are not neurological disorders that lead to learning difficulties. Let us agree that as teachers we do often create I.d. Apart from this aren't there non environmental conditions that are more difficult to deal with? Then I wish to return to the question. What is Special ED? **302:** Why are children falling behind? A question with many responses. Some certainly have needs that we do not seem to understand well or are just not responding to. Let us try to consider the importance of dealing with diversity in our schools. Dr Bert has opened an interesting group for this purpose. It may prove to be useful in the long run.

These examples or coding suggestions were not conclusive, but they began to provide a glimpse into the significance of the three codes in collaborative knowledge-building settings. However, further exploration was needed in order to gain a deeper understanding of the context for sustaining collaborative knowledge-building within CEN groups. Nevertheless, this exploration provided enough data to map the operational processes which are shown in the following stage. With a clearer understanding of this context, I turn my attention to mapping the AODM operational process with the hope of justifying the way forward in cycle 3.

Interpret and communicate findings (AODM Stage 6)

This step of the AODM built on the previous stage and helped in mapping the operational processes as a way of interpreting and communicating the research findings. The mapping of operational processes was also useful in identifying the contradictions in the activity system. In Chapter 2, I described Engeström's idea of contradictions and tensions in his activity theory interpretation. Contradictions refer to the "historically accumulating structural tensions within and between activity systems" (Engeström 2001, p.137) which serves as a means of assisting researchers in identifying challenges that bring about change or development (Barab et al. 2002; Yamagata-Lynch & Haudenschild 2009). Mwanza-Simwami (2009) contends that "contradictions are identified when results of an activity analysis do not match with desired outcomes or when problems emerge whilst the learner is interacting with tools or with other learners participating in that activity" (Mwanza-Simwami 2009, p.107). **Table 5.16** offers an adaptation Mwanza's (2002) mapping of operational processes. This approach facilitated the identification of contradictions that existed within the activity system which are presented as highlighted text in the table. From the mapping activity I was able to identify the emphasis placed on groups and their importance in the network. While knowledge-building activities in the wider network were important, it was the activities and participation at the group level that seemed most promising in sustaining collaborative knowledge-building within the network. In **Table 5.16**, I show the need to focus on groups through an interpretation of Mwanza's technique for mapping operational processes. The approach also highlighted some tensions that together made for an interpretation of the contradictions within the activity system.

Table 5.16 - Mapping Operational processes & highlighting tensions

Notation	Generated research questions	Contradictions
<p>subject-tool-object</p> 	<p>What processes (tools) do individual members (subjects) of CEN use to collaboratively build and share knowledge (Object)?</p>	<p>Despite the focus on technological tools in wider network, dialogic activity within group forums is the most popular process</p>
<p>subject-rules-object</p> 	<p>How does the absence of explicit guidelines (rules) influence the way individual members (subject) collaboratively build and share knowledge (Object)?</p>	<p>Most members indicate knowledge sharing, knowledge-building as main reasons for joining but only a few perform this activity</p>
<p>subject-division of labour-object</p> 	<p>How does the lack of clear roles and responsibilities (division of labour) influence the way in which individual members (subject) collaboratively build and share knowledge (Object)?</p>	<p>Members are encouraged to join groups but most CEN members are not clear about their roles in creating, joining, sustaining groups; Group initiators motivate members to join groups of interest but are not clear on how the group should be guided or moderated</p>
<p>community-tool-object</p> 	<p>How do the processes and conditions (tools) affect the way groups (subject) collaboratively build and share knowledge (Object)?</p>	<p>Emphasis on network-wide synchronous tool (Elluminate Live) but asynchronous computer mediated communication within groups was most popular activity in the network</p>
<p>community-rules-object</p> 	<p>How does the absence of guidelines (rules) affect the way groups (subject) collaboratively build and share knowledge (Object)?</p>	<p>Group rules are largely implicit but some initiators give guidelines for the group's operation</p>
<p>community-division of labour-object</p> 	<p>How do group initiators (division of labour) influence the way groups (subject) collaboratively build and share knowledge (Object)?</p>	<p>Group initiators have access to tools to facilitate collaborative knowledge-building but some appear to do very little to facilitate collaborative knowledge-building</p> <p>Groups were created for collaborative knowledge-building but no clear roles defined to facilitate this</p>

Adapted from Mwanza (2002)

Table 5.16 begins with the **subject-tool-object** relationship. Here the research questions provided an insight into the tension between the focus on tools in the wider network and the dialogic activity in the groups. This suggested the need to focus more on a technique for supporting the activities that were taking place within groups. Similarly, the **subject-rules-object** and the **subject division of labour-object** also suggested the need to focus on a way to support the object at the group level. For example, in the **subject-rules-object**, most members indicated knowledge-building and sharing as major reasons for joining the network, but only a small percentage of them engaged in these activities. A very small number of members from the network are part of groups. This is closely linked to the **subject-division of labour-object** which pointed to the need for members to have a clearer understanding of the roles in creating, joining and sustaining groups; and the need for a group initiators' strategy for mediating collaborative knowledge-building in groups. This suggested the need for guidelines to support members and group initiators in facilitating the collaborative knowledge-building process in groups. At the community level, tensions also indicated the need to focus on collaborative knowledge-building in groups. For example, in the **community-tool-object**, despite the great emphasis placed on synchronous sessions within the network, the most popular means of communication was asynchronous communication within groups. Therefore, it made sense to focus on asynchronous communication in groups as a technique to sustain the most popular means of communication within the network. The **community-rules-object** and the **community-division of labour-object** also addressed the activity at the group level, where the need for the moderating of group activity was suggested. For example, while groups were created for collaborative knowledge-building, very little facilitating was done by group initiators to sustain the collaborative knowledge-building activity. It appeared that there were processes and presences that could support the work of group initiators in facilitating the collaborative knowledge-building within groups. Additionally, within groups there were no clearly defined roles. These challenges therefore urged the need to intervene and make changes. **Table 5.17** provides an outline of suggestions from my perspective of designer to address the interventions and changes needed as a way forward. Each tension in **Table 5.17** represents a corresponding research question number from **Table 5.16**.

Table 5.17 – Contradictions that emerged from of the analytical process

No.	Contradiction	intervention/change
1	Despite the focus on technological tools in wider network, dialogic activity within group forums was the most popular process.	More focus on communicative action within groups
2	Most members indicated knowledge-sharing, knowledge-building as main reason for joining but only a few performed this activity.	A framework to facilitate collaborative knowledge-building in groups needed
3	Members are encouraged to join groups but most CEN members are not clear about their roles in creating, joining, sustaining groups ; Group initiators motivated members to join groups of interest but were not clear on how the group should be guided or moderated.	Framework to guide activity
4	Emphasis on network-wide synchronous tool (Elluminate Live) but asynchronous computer mediated communication within groups was most popular activity in the network	Supported means of communication
5	Group rules were largely implicit but some group initiators gave guidelines on how things should operate in groups	Framework to guide leadership activity
6	Group initiators had access to tools to facilitate collaborative knowledge-building but some appeared to do very little to facilitate collaborative knowledge building Groups were created for collaborative knowledge-building but no clear roles were defined to facilitate this	Make collaborative knowledge-building objects more identifiable, sharable

The analysis in this section drew attention to the importance of the activity, participation and collaboration that took place within CEN groups, and was helpful in highlighting tensions within the CEN activity system. These tensions revealed the need for further exploration and interventions to fully understand how collaborative knowledge-building could be facilitated within CEN groups. This, however, is beyond the scope of this chapter, and will be addressed in cycle 4 (Chapter 7) of the wider research project. A review of the findings revealed that learning design in the research setting was a complex process that was more suited to a participatory design frame. This further indicated the need to find a way to make sense of collaborative knowledge-building data in its natural setting in order to advance a framework for sustaining the collaborative knowledge-building within groups. However, before I begin this participatory exploration, I shall reflect on the idea of making sense in groups for the purpose of informing my approach to working with a group of co-designers (cycles 3 and 4) to explore a participatory approach to developing a framework to mediate collaborative knowledge-building in groups. Likewise, the reflection seeks to understand how groups make sense within a social networking collaborative knowledge-building setting.

5.3 Reflection: Discussion & Literature review

In Chapter 2 I introduced collaborative knowledge-building as used in the research setting. In this section, I build on this argument as a way to understand the knowledge-building and sharing in the groups that were situated within the social networking setting. This literature review and reflection also seeks to illuminate a framework for making sense in group settings.

Although collaborative knowledge-building is linked to the notion of computer supported collaborative learning (CSCL⁹), there is controversy about its use in different settings (Stahl et al. 2006). CSCL has been an area of interest to many for some time, and has offered different focuses over the years (Crook & Lewthwaite 2010). However, a review of the literature reveals that CSCL appears to be used more to refer to the learning that takes place in group instructional settings (Gokhale 1995; Crook 1996; Crook 1998), and less in informal learning that takes place in the non-instructional or academic settings. Therefore, I maintain that collaborative knowledge-building in social networking should be positioned in its own right. In Chapter 2, collaborative knowledge-building was described as encompassing a number of processes that suggest the need for mediation. In this conceptualisation, collaboration is a mediating artefact of the process of collaborative knowledge-building and sharing. Collaboration in this research setting suggests a dynamic relationship between computers, networks and humans as mediators, in a relationship which enables this process to take place. The work of (Stahl 2000; Stahl 2005; Stahl 2006) is helpful in understanding the relationship between humans within a collaborative social networking setting. In his presentation of a model for collaborative knowledge-building, Stahl (2005) capitalises on the notion of learning as a social process that requires the active involvement of groups in building knowledge. While Stahl's approach builds on Koschmann's (1996) idea of computer supported collaborative learning, the model

⁹ Different concepts are used in the literature to identify the educational use of computers to support collaborative knowledge-sharing and learning. These include cooperative learning environment, computer-supported collaborative learning environment, online learning environment and network learning environment.

leans on other theoretical traditions in establishing the case for collaborative learning as a complex socially mediated process. The model is an interpretation of how learning occurs in complex group-centred settings with mediation playing a key role. Stahl's (2005) conceptualisation is labelled 'group cognition' and is represented as a knowledge-building process that is illustrated sequentially (Stahl 2000) (see **Figure 5.17**). What is interesting about the model is the inclusion of 'tacit pre-understanding' as a cycle of personal understanding within the online knowledge-building process. At the core of this cycle is the assumption that informal knowledge is a precursor to collaborative knowledge-building in the wider group setting. Although informal knowledge remains difficult to make explicit, the model helps in understanding the role of informal knowledge in creating meaning collaboration. Negotiation forms a key aspect of this knowledge-building process, which addresses the concept of truth as consensus as discussed earlier in Chapter 3. The outcome of this negotiated knowledge is what is referred to as 'accepted knowledge'. What needs to be highlighted from the knowledge-building process model is the communicative actions needed to make such negotiated collaborative knowledge possible. Stahl (2000), however, makes up for this adequately by presenting the negotiation of perspectives in a table of phases of Knowledge-building in computer supported learning environments. Thus, negotiation is presented as a key component in achieving the 'accepted knowledge', and is helpful in understanding the negotiation that takes place within online social networking settings. While the idea of learning in a group seems commonplace to social learning theory, Stahl's (2005) approach takes on the idea of cognition in groups at a different level, in that he places the emphasis on the collective as the unit of focus in trying to understand how knowledge is constructed and shared. When applied in social networking settings, this assumption addresses interactions and participation within groups, where the various technological affordances facilitate activities that lead to the idea of shared knowledge and collaborative learning. This complex composition of the personal understanding with social and technological objects makes Stahl's approach useful in the present research context. Stahl's (2000) model takes into account tacit knowledge as a subset of the group cognition knowledge construction cycle, and is illustrated in **Figure 5.17** below.

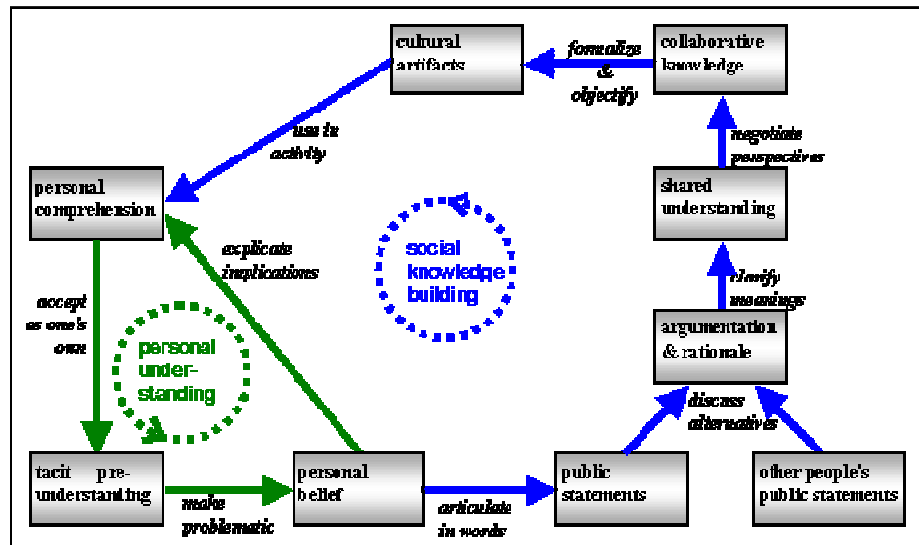


Figure 5.17 – Stahl's model of knowledge-building in groups (Stahl 2000)

Figure 5.17 starts at the bottom left with the 'personal understanding' cycle where 'personal belief' is 'articulated in words'. These articulated words form 'public statements'. The 'public statements', coupled with 'other people's public statements', provide the opportunity for 'discussing alternatives' which leads to the 'augmentation and rationale' stage. Following this is the process of 'clarifying meanings', which leads to 'shared understanding' in the group setting. This 'shared understanding' provides the basis in which 'perspectives are negotiated' to form 'collaborative knowledge'. The 'collaborative knowledge' is then formalised and objectified to form 'cultural artefacts' and representations. These cultural artefacts are then used by individuals in formulating their personal understanding of the cultural artefact.

Thus, collaborative knowledge-building in Stahl's (2000) model suggests knowledge-building from a distributed, yet situated perspective, which accepts informal learning as a key component of the complex knowledge-building process. Stahl (2000) bridges the divide between formal and informal learning by valuing the process of tacit understanding. Collaborative knowledge in a social networking

setting suggests the need for individuals to make use of a number of tools¹⁰, a position supported by Stahl's inclusion of mediation by technology. Tools of collaboration in social networking are endless. A note of caution, however: while many tools are designed to promote collaboration, using them does not necessarily mean that collaboration is taking place. Although these technological tools allow individuals to participate easily, it would take more than a comment, rating, or 'tweet' to demonstrate collaboration in social networks. More importantly, spending endless hours of commenting, posting, and tweeting may not necessarily lead to collaboration. In his book, *The Culture of Collaboration*, Evan Rosen showcases collaboration as a technique for creating value within specified spaces (Rosen 2007). He introduces ten cultural elements of collaboration: trust, sharing, goals, innovation, environment, collaborative chaos, constructive confrontation, communication, community and value. Rosen (2007) contends that value creation is an integral part of collaboration. While I am not going to elaborate on these cultural elements, I can say that they suggest that tools of social networking are imbued with values. On this view, values such as trust, networking, community, sharing, reciprocity, openness, creativity, social participation and collaboration are seemingly tied to collaborative knowledge-building in social networks. This complexity of knowledge-building and sharing in social networks has implications for the way such environments are designed for mediating the knowledge-building and sharing process (Conole 2009). Therefore, the focus should not be on the network itself, but on the capacity of the network to support meaningful collaborative knowledge-building activities by taking into account the values they imply. Moreover, networks are not subjects and, therefore, do not have any intentionality and motive in themselves. This underscores the need to focus on collaboration as a mediating process that supports group cognition within the social networking collaborative knowledge-building environment. There are, however, implications to adopting group cognition as a frame to support the research inquiry, particularly since researchers are encouraged to focus on "multiple perspectives, intersubjective meaning making, and knowledge building at the group unit of analysis" (Stahl 2006, p.20).

¹⁰I use tools in a rather loose sense to include technological tools and the social networking behaviours (commenting, tweeting, following, posting, liking, rating etc) they afford.

5.4 Conclusion: The Way Forward

In all, the AODM provided a useful set of tools that enabled me to capture a deeper understanding of the CEN through the analysis of human activities and interaction in the CEN. In particular, the decomposition of the activity system, and the identification of research questions provided the basis for further exploration in understanding collaborative knowledge-building within groups. The analysis and interpretation in this cycle suggested the need to focus on understanding collaborative knowledge-building that took place within CEN groups. The mapping of operational processes (see **section 5.2**) was useful in highlighting the tensions within the CEN activity system. These tensions provided the impetus for intervention so as to achieve the desired outcome of a sustainable framework of collaborative knowledge-building. The analysis addressed the idea of processes and presences as tools or mediators in the collaborative knowledge-building process as a means of supporting the activities within CEN groups. The focus on processes (what needs to be done) and presences (the environment or condition) provided a useful way of conceptualising the mediation that was required for effective collaborative knowledge-building in CEN groups. Thus, by using this approach I acquired an understanding of the CEN that would enable me to make appropriate interventions and further exploration. The literature review and reflection served to inform my approach in the attempt to understand the collaborative knowledge-building process in the research setting. The focus on group cognition was helpful in my discovery of a way to juxtapose the technological and social aspects of knowledge-building within social networking settings as well as addressing the need to take a more participatory approach to making sense of the research and design for learning in the network. Therefore, the way forward was not a question that had an answer; instead, it was a learning design exploration in making sense in groups through active dialogue and negotiation in group settings, so as to co-construct knowledge to advance a framework that could be used to mediate the collaborative knowledge-building object in the network.

6. Chapter 6

The CEN Advisory group: Exploring the nature of the CAG - the participatory design working group

Introduction

This chapter addresses the larger research question and the design challenge (What is the nature of a learning design approach for exploring a framework for mediating collaborative knowledge-building in the CEN?), but in this cycle I provide an account of the nature and activities that took place in the CEN Advisory Group (CAG), that supported the participatory design process. I do this by using the first two stages of the AODM and adhering to the reformulation of the Eight-Step-Model as applied in cycle 2 (Chapter 5). Following the interpretation of the activity systems, I present the participatory design activity by analysing the computer mediated communication that emanated from interaction within the group. I continue to use the multiple plane analysis by interpreting the learning design and CAG activity systems, in this way explaining how the group contributed to the wider learning design activity and how, as learning designer, I made sense of the collaborative process. A number of design suggestions, observations and reflections resulted from this process. However, the participatory design activity - exploring the processes and presences mediating the collaborative knowledge-building in groups-is outlined in the next cycle (Chapter 7). The final section of the chapter is devoted to reflecting and reviewing the literature in which six themes emerged as presences. These presences comprise the basis of conceptualising the collaborative knowledge-building framework for the CEN.

6.1 Planning: The Action-Cycle Design Process

The planning Context

The evolution of the CAG was the result of a synchronous reflective workshop conducted in Elluminate Live. I assumed various roles in the group, but in this cycle I describe my roles as group facilitator, researcher and designer. I then move on to record how I addressed the learning design challenge (exploring a framework to mediate collaborative knowledge-building in the CEN) by working with the CAG to make sense of the design process - to be dealt with later in cycle 4 (Chapter 7). But

for now I analyse the CAG activity system, using two tools from the AODM in order to capture the nature of the group. This planning section narrates how these methods were executed for this cycle.

Analytical framework

The analytical framework draws on analysis of my field notes, member profile pages, asynchronous group dialogue conducted in the CAG group, and synchronous group dialogue conducted in Elluminate Live. A total of 9 asynchronous wall postings, 20 threaded discussions and 4 synchronous Elluminate Live meeting sessions were included as source material for this analysis. Members of the CAG also participated in four live Elluminate sessions from October 18 2009 to December 12 2009 (see **Table 6.1**). I chose the November 28th discussion as a unit for content analysis (for transcription, see Appendix 2). The synchronous group discussions at that time had matured to a point at which I felt there was sufficient data to code. The synchronous group discussions were transcribed and imported into Atlas.ti for coding by means of an inductive approach (Corbin & Strauss 2008), the purpose of which was to allow themes to emerge from the data. The background to this approach was explained in Chapter 3. As I was concerned about intra-rater reliability at this stage, I repeated the coding exercise three times to ensure familiarity, and to improve the trustworthiness of the codes. I analysed each statement and coded it for meaning. The aim was to illuminate the themes that translated into processes and presences necessary for mediating the collaborative knowledge-building and sharing process in groups. I therefore focused on two research questions that fitted within the wider research question. These are outlined below.

Objective

To explore the nature of the CAG using an adapted Eight-Step-Model.

General Research Question

What is the nature of a learning design approach for exploring a framework for mediating collaborative knowledge-building in the CEN?

Cycle 3 Research question

Research Plane

What is the nature of the CAG?

Design plane

What is the nature of the participatory design approach in the CAG?

The methods of data collection

In Chapter 5 I adapted the Eight-Step-Model from the AODM. I continue to use this adaptation in this chapter, building on the utility of the AODM in the smaller group research setting. In doing this I present an interpretation of the CAG, using the first two stages of the AODM. Stage 1 of the AODM requires researchers to interpret the situation being examined in terms of activity theory, and stage 2 presents a model of the situation being examined (Mwanza 2002, p.190). **Table 6.1** gives an overview of the methods used to address the research questions for this cycle. I use these to present the nature of the CAG.

Table 6.1 -The timeframe and methods used

Research Questions	Data	Methods of analysis	Timeframe
What is the nature of the CAG?	Text	Analysis of asynchronous dialogue; Member page profiles	Jun 30 2009 to Jun 29 2010
What is the nature of the participatory design approach?	Text	Content analysis of synchronous transcripts; Review of literature	Jun 30 2009 to Jun 29 2010

In the following sections, I describe my work within the CAG. My purpose for employing this methodological approach is to help gain a comprehensive insight into the CAG activity system. In addition, I plan to continue to apply the multiple plane analysis as a way of building on the approach adopted in previous chapters. I shall also continue to use the following adaptation of the Eight-Step-Model, which was introduced in Chapter 5:

1. Community: What is the environment in which [the] activity is being carried out?
2. Subject: Who is involved in carrying out the activities?
3. Activity: What is the activity of interest of the members?

4. Object: Why are the activities taking place?
5. Mediators: What are the tools, rules and roles that mediate the activities?
 - a. Tools: By what means are the subjects performing the activities?
 - b. Rules and regulations: Are there any cultural norms, rules or regulations governing the performance of the activities?
 - c. Roles: When carrying out activities, who is responsible for what, and how are the roles organised?
6. Outcome: What is the desired outcome of carrying out this activity?

Adapted from (Mwanza 2002)

6.2 Acting: Observing and Analysing Process

The Acting Context

In this section I revisit the adaptation of the Eight-Step-Model as outlined above, and interpret the CAG activity system. The Activity-Oriented Design Method was used to operationalise activity theory in this setting, and to describe the activity system under investigation. This meant that it opened up a way to understand the formative or historical development of activity and participation within the natural setting. The AODM passed the test of application in the previous cycle (Chapter 5) where it was used as a technique to interpret the wider network.

Interpreting the CEN Advisory Group

In this cycle I use the AODM (stage 1) as a lens to explore the context of participatory design activity, converting the CAG into an activity system of investigative focus. I now present an interpretation of the CAG activity system, using the adapted Eight-Step-Model for the research setting. As in the previous cycle (Chapter 5), I begin with a focus on the community.

Community: What is the environment in which the activity is being carried out?

The CAG functioned in an advisory role, and in this particular cycle I worked collaboratively with the group with the desired outcome of developing a collaborative knowledge-building framework. The group was a purely online group: there was no face-to-face contact. All members were part of the wider CEN, and their introduction to one another was one of the collaborative knowledge-building activities of the network. The community consisted of six individuals who volunteered to serve as members of the CAG - was the result of the synchronous Elluminate Live reflective workshop conducted on June 20 2009. In the reflective workshop session a number of individuals volunteered to serve as part of the CAG. Following the reflective workshop, I created a NING group and invited the volunteers to join. The NING group served as the environment for conducting asynchronous computer mediated discussions. The group, whose role was identified as advisory in nature, was established for the purpose of guiding the manner in which operations were conducted within the network. One of the first things we explored was how we were going to work together. A participatory approach was the method suggested for co-constructing knowledge and meaning making within the group. The sessions spanned three months (see **Table 6.4**), and were organised around themes that evolved from of network activity and observation. At this time we had no clearly defined participatory design goals. Instead, members offered suggestions about how knowledge-building could be mediated. The themes enabled us to focus on what the CAG thought was important, while allowing us to follow the development in a responsive manner. My observations and interactions as researcher within this group convinced me of the need for a deeper participatory design inquiry. From my designer perspective, I felt that the process of design in this setting was complex, and this motivated me to take on a participatory approach. During the reflective workshop I presented data from an initial exploration of the network. This was my first in-depth attempt at harnessing various methods of inquiry, which resulted in the interpretation of the network in Chapter 5. Accordingly, the group felt that the participatory approach had implications for the sense of community, ownership and shared responsibility within the group. Members were of the opinion that the concept of ownership also had implications for the type of leadership that evolved from the participatory design process, and I endorsed that position. As designer and researcher, I believed that the process was

about drawing people into trajectories right in the centre of the CAG, instead of leaving them on the peripheries (see situated learning from Chapter 2). In addition to the roles of researcher and designer, I took on the roles of group initiator with the goal of designing a framework to guide the collaborative knowledge-building activity within CEN groups. Before proceeding any further, I shall provide information about the members' background experience and expertise.

Subjects: Who is involved in carrying out this activity? What experiences do they bring to the group?

The group comprised six members with varying interests and experience. Interestingly, four members of the group were doctoral students, three of whom were full-time and one part-time. The general interests in the group included e-learning, professional development, and teacher education. In the group forum, individuals gave a biographical sketch of their academic interests and experience by way of introduction. Their profiles are summarised in **Table 6.2** under the unifying themes of Education, Work Experience and Research Interests. The members in the group are anonymised but P5, LeRoy, is not. As researcher I held the view that anonymising my role would make for a less trustworthy account.

Table 6.2 – Profile description of CAG members.

	Mille P1	Indiana P2	Philicia P3	Jean P4	LeRoy P5	Bert P6
Education	BA Computer Sci.; MSc Software Dev. & Management; PhD Student	Not given	MA in Distance Education; PhD student (part-time)	BSc. in Chemistry and Mathematics, Diploma in Education, MA in Curriculum Studies and Educational Leadership, PhD student,	BS Social Studies; Diploma in Education; MA in Instructional Design & Technology; PhD Student	Retired professor of neuropsychology - emphasis on learning disability and individual differences in thinking style
Work experience	Quality Assurance Analyst in the Banking industry; Software testing in education sector; IT/Business Faculty member at the community college level; Project management consulting; Online Lecturer for university	Secondary school teacher 11years; Lecturer in Sociology at the national Community College for 6 years; Online tutor regional university distance education programme	Assistant Curriculum Development Specialist at the University of the West Indies Open Campus	Mathematics and Science teacher for 22 years, Head of Department (Mathematics, IT and Business) secondary school, acted Vice Principal	Humanities educator (Social Studies, Geography, History, Caribbean Studies) for 13 years; Head of Humanities Department at Secondary School; General secretary and ; President of national Teachers Association	Taught statistics and conducted research for 35 years at university; Volunteer and CEO (since 1994) of non-profit organisation with a dual mission to support persons with disabilities and lifelong learning.
Research Interests	Learning Technologies; Multicultural e-learning; E-learning evaluation; Workplace e-learning; Role of e-learning in capacity building for developing countries	Sociology; Culture, Family and social inequality	Activity theory research; Open educational resources; Online learning initiatives in the Caribbean; Instructional design	Mathematics education, Teacher education, Curriculum and Instruction, CPD, Educational Policy Studies	Learning design; Curriculum & instruction; Social exclusion education; E-learning; Social media; Technology education; Open education; CPD	Disabilities; Lifelong learning; Excel in Mathematics education; Statistics; Online platforms and tools

Activity of interest: What are the activities the group were interested in?

The CAG served primarily in an advisory role, as has been noted before. The group had evolved to assist with the administration of the network. Such a role would normally involve activities like the administration and management of the network but, in this particular cycle, the CAG focused on sharing suggestions for a framework that was intended to inform the collaborative knowledge-building process within CEN groups. In the previous cycle (Chapter 5), I identified collaborative knowledge-building as the shared object that drove the activities in the network. However, within the CEN there were other embedded activity systems which were recognised by their objects. The CAG was one example of a group with an embedded activity system peculiar to it. On the one hand the CAG shared the collaborative knowledge-building object of the wider network, while on the other hand, the group performed the specific activity of participatory design as an embedded activity system. Thus, the advisory activity within the CAG was one example of an embedded activity system within the CEN.

Despite their advisory role, the CAG's contribution was regarded as a way of informing the design decisions within a group collaborative setting. Interestingly, this advisory activity was achieved by a number of actions and operations, in this way drawing on Leont'ev's (1978) conceptualisation of levels of activity. The advisory activity was therefore driven by a specific goal: the conscious use of dialogic inquiry as part of a participatory design object. This centred attention on the motive for the activity which had been influenced by the contradictions as illustrated in **Tables 5.24** and **Table 5.25** from Chapter 5 (cycle 2). As seen there, the lowest level of activity included the operations - automated processes or procedures that fuelled the actions in an activity system that addressed how the actions of individual members contributed to the advisory activity. **Table 6.3** illustrates how these three levels of activity were conceptualised in this cycle, and **Table 6.4** shows member participation in the synchronous sessions conducted in Elluminate Live.

Table 6.3 - The level of CAG activity

Level	Activity performed
Activity	Advising
Action	Dialogic exchanges; Synchronous meetings
Operation	Text postings; Language

These activity levels together provide the meaning or the participatory design workspace (object) or motivation for the desired outcome.

Table 6.4 - Members who participated in each synchronous meeting session.

Session	Mille P1	Indiana P2	Philicia P3	Jean P4	LeRoy P5	Bert P6	Total
Oct 18			X		X		02
Nov 7			X	X	X		03
Nov 28	X			X	X	X	04
Dec 12	X			X	X	X	04
TOTAL	02	00	02	03	04	02	13

Table 6.4 shows that the sessions conducted on November 28 2009 and December 12 2009 were the ones with the highest member participation and presence while the first session, conducted on October 18 2009, was the one with the least member participation and presence. Although members attended an average of two of the four sessions, the interaction in the synchronous sessions was sufficient to give an insight into the participatory design activity. While **Table 6.4** does not reveal the level of individual contribution, it gives an idea of the level of commitment and participation of group members. For example, we can begin to discern a link between member synchronous meeting participation in **Table 6.4**, and the level of engagement in the asynchronous discussion forums represented in **Table 6.5**. **Table 6.5** displays the total number of posts by each member of the CAG. The link, however, is a weak one, and further analysis is needed to explore if indeed there is any relationship between member participation in synchronous sessions and the level of engagement in the asynchronous discussion forums. That said, this analysis begins to reveal the individual contribution to the participatory design activity. Later in this chapter, I shall discuss the details of the dialogic exchanges and describe the advisory activity that evolved from the synchronous discussions. While Indiana

indicated a desire to participate in the activities, her actions proved that she was not that active within the group. Indiana's participation is seen only in the asynchronous activities (see **Table 6.5**), but was at a low level when compared to the other members.

Table 6.5 - Activity as posts in asynchronous CAG discussion forum

Participant	No. of posts
LeRoy	34
Bert	31
Mille	17
Jean	11
Philicia	04
Indiana	01

Table 6.6 shows the discussion activity within the CAG. The discussion posts relating to 'Introduction' solicited the least responses while the 'Online Summer Education CEN conference' and 'Leadership & communication' polled the most responses.

Table 6.6 - Activity in CAG discussion forum

Discussion Title	Date Started	No. of Replies	Last Activity
Online Summer Education CEN conference	Feb 05 2010	14	Feb 16 2010
Leadership & Communication	Nov 09 2009	14	Nov 28 2009
Meeting 1	Oct 18 2009	10	Nov 07 2009
Reflection Activity File	Jan 17 2010	08	Mar 06 2010
Meeting 2 - November 7 2009	Nov 08 2009	07	Nov 20 2009
Next Step?	Oct 04 2009	05	Oct 17 2009
Philicia's Introduction	Sep 23 2009	03	Oct 04 2009
Group Coding	Aug 21 2010	03	Sep 03 2010
Future meetings for the Advisory group	Jan 04 2010	03	Jan 15 2010
Meeting 3 - November 28 2009	Nov 28 2009	02	Dec 08 2009
Mille's Introduction	Sep 09 2009	02	Oct 09 2009
Ownership & Roles	Nov 09 2009	01	Nov 10 2009
Welcome - Read me first	Sep 09 2009	00	Sept 09 2009
This is the file I wanted to attach	Aug 23 2010	00	Aug 23 2010
Indiana ' Introduction	Sep 15 2009	00	Sep 15 2009
LeRoy's Introduction	Sep 10 2009	00	Sep 10 2009

Meeting Recording	Jan 16 2010	00	Jan 17 2010
Jean's Introduction	Sep 13 2009	00	Sep 13 2009
Introductions: read me second	Sep 09 2009	00	Sep 09 2009
Introduction	Jun 25 2010	00	Jun 25 2010

Object: Why are CAG members performing this participatory design activity?

Design in a probabilistic sense aspires towards goals that are achievable, given the context. This goal becomes embedded within the activity system as that thing that imbues the activity with significance. I concur with Engeström's (1987), argument (as discussed in Chapter 3) that the **object** becomes the problem space - the production space of design which finds motivation in the **desired outcome** (in this research cycle this is the framework for mediating knowledge building).

This perspective and interpretation of object is promising in explaining how members of the CAG worked to reach the desired outcome since it showed how CAG members worked in the participatory design activity (**object**) as the driving force towards the development of a framework for mediating collaborative knowledge-building in groups (**desired outcome**). By identifying the object, I acquired a better understanding of the learning design activity system where the CAG worked together as a group to co-construct knowledge, to make sense collaboratively. It was, however, easy to confuse the object with the notion of **desired outcome**. The participatory design approach therefore was a collaborative way of informing the design intervention. Some reflections from my field notes indicate my insight into and support for the participatory design object:

1. There is support for an appropriate collaborative knowledge-building framework within an online Caribbean context. This is supported by the growth in membership in the network and by the varied interests indicated within membership profiles.
2. Some sort of intervention is therefore needed to meet the needs of members who have indicated interest in topics.
3. There is little guidance on how a design approach can be realised within the present context.
4. There is also a need for a process of resources identification, sharing and rating (evaluation), and listing (dissemination). This is supported by requests members made during the live meeting sessions. But this seems problematic in this NING platform.

Field notes, June 23 2009

Interestingly, item four from the fields notes, seems to indicate the need for processes and presences, which I address later in the chapter. Nevertheless, the participation in the CAG provided an approach to address the gaps identified in the notes above while at the same time identifying the tools, rules and roles that mediated the collaborative knowledge-building process. I look at these mediators in the next section.

Mediating the Activity: Tools, Rules and Roles

The following section focuses on the tools, rules and roles that mediated the activities within the CAG. I shall begin by looking at the tools that formed part of the CAG activity system. **Table 6.7** outlines the technological and social tools that composed part of the network.

Tools: What tools (processes, conditions, frameworks and approaches) are used to achieve the group activities?

Table 6.7 – The categorisation of tools

Technological	Social
NING group; Elluminate	Interactions: group postings, individual messages–email, dialogic inquiry

In Chapter 5 I introduced the notion of tools as the processes (what is done) and presences (the environment or conditions) that mediate the collaborative knowledge-building activity. Therefore the social processes of posting comments and discussions are recognised as a tool that others build on within the group setting. **Figure 6.7** provides a developing perspective of these tools or processes. From this perspective the processes and presences within the learning design activity also represent the tools by which the object is realised. The idea of tools as processes and conditions is nothing new. Verenikina (1998), for example, recognises tools as social objects which are developed through social interaction as specific modes of operation. This mode of operation, from a collaborative knowledge-building perspective can be interpreted as processes and presences that mediate the collaborative knowledge-building activity within the CEN groups. Likewise in this design setting, tools are recognised as encompassing the processes

and the presences that mediate the entire collaborative knowledge-building and sharing activity. Processes therefore, when interpreted within this setting, include the participatory activities and interactions that support effective collaborative knowledge-building in CEN groups. Similarly, presence is interpreted as the environment that provides the working space for the processes to thrive. Interestingly, it is not clear how individuals will come to access or use these tools (processes and presences), and this remains the challenge for this research.

Rules and Regulations: What rules, norms, procedures, or protocols govern the performance of group activities?

The CAG is a subset of the CEN and therefore is influenced by the rules and norms emanating from the wider network (see Chapter 2). Within the CAG, the design activity is not regulated by explicit procedures or protocols. However, as it is part of a group that is object-oriented, it is expected that there are inherent procedures which are guided by implicit and explicit expectations or rules that shape how the object is achieved. Identifying these rules, however, seems difficult since they are largely implicit, and embedded within the object oriented-activity. This includes, but is not limited to, the way individuals interact within the group, and the communication protocols that seem to motivate member participation. In **Table 6.8**, I outline some of the expectations or rules that comprised part of the CAG. As noted, these are not extensive, but they describe some of the basic rules that mediated the participatory design activity within the CAG.

Table 6.8 - The rules and norms that existed within CAG

Rule/Norm	Description/observation
The frequency of synchronous sessions	Initially we had no established pattern of meeting. However, members indicated an interest in having meetings on an established monthly interval
Duration of synchronous sessions	Meetings were generally for one hour. However, time was often negotiated during the session
The expectation of responding to comments in discussion forum and synchronous sessions	This indicated interest in dialogue. Members were expected to respond to comments that were directed towards topics and themes raised
Informing of time available to participate	Members would often indicate their availability to take part in discussions. This was particular to the synchronous sessions when members were expected to meet at a

	particular time and date within a specific online meeting space
Negotiation of the tools used to conduct the live meeting space	Members often suggested and negotiated the tools for conducting the dialogue. Most of the sessions were conducted using Elluminate Live, but some members indicated an interest in using Skype

Roles: When carrying out activities, who are responsible for what, and how are those roles organised?

Within the CAG, members were seen as collaborators within the participatory design working space directed towards the desired outcome of a framework to mediate collaborative knowledge-building within the CEN. I made the intention of the group clear - the role of members was to participate collaboratively in the participatory design and network administrative activities. All members therefore agreed to the role of advisors, co-constructing meaning and knowledge within the group. Conceivably, their participation placed them on the periphery of the participatory design activity, and their roles were organised through further negotiation during participation in the design process. My participation and intentions within the group were clear: I functioned in the capacity of researcher, designer and group initiator. Naturally, this overlapping role had implications for the way the participatory design activity was viewed, a point that was in keeping with my positionality within the research project, as outlined in Chapter 3.

I maintained multiple roles in the group. Some members were willing to assist by volunteering to share the responsibility within the design, research, and leadership process. For example, in meeting sessions we agreed that the role of chair during the synchronous sessions should be shared. Role sharing evolved during the interaction within the synchronous group sessions. However, only one of the four sessions conducted from October 18 to December 12 2009 was chaired by another member. This emergence of role sharing was influenced by my sharing a quote (in the session on November 7) which represented the leadership philosophy of Lao Tzu, Chinese founder of Taoism. "A leader is best when people barely know that he exists, not so good when people obey and acclaim him, worst when they despise him. *Fail to honour people, they fail to honour you.* But of a good leader, who talks little, when his work is done, his aims fulfilled, they will all say, "We did this

ourselves" (Spears 1995, p.242). In response to this, Jean made the following statement:

I want to say something about that quotation because that is very true because a good leader knows how to work himself or herself out of a job. So that, that is the essence of sustainability because if the leader...if there is something goes wrong with the leader and the leader has to exit for whatever reason the particular organisation has to continue...but if all things fall apart because the leader is not there then there is really no sustainability...so once you could work yourself out of a job that's good"...this concept of leadership is if I dare say is kind of revolutionary in the Caribbean if you understand how we have been socialised so I think you are on to something here and it may be our way to start something new in our environment in the Caribbean where it is not this top-down thing or I own it it's about me or I am the star...it might start to break through a certain type of thought processes very slowly but I hope surely.

(Jean, statement in Elluminate Live session)

Two other members indicated an interest in assisting in the research process by volunteering to serve as coders. Cycle 4 (Chapter 7), outlines how I worked collaboratively with these two members to code a unit of analysis in order to make sense of data from network activity.

Outcome: What is the desired *Outcome* of carrying out this activity?

As in the application in Chapter 5, I maintain that the desired outcome is the broader anticipated end product that serves as the motivation to take the object forward. The desired outcome of the participatory design process is a framework for mediating collaborative knowledge-building and sharing within the CEN. The development of this framework addresses the need for a way to sustain and stimulate collaborative knowledge-building within groups in the network. The attempt to develop a tool to mediate the collaborative knowledge-building process emerges from the observation and investigation within the network. In cycle 2 (Chapter 5), I identified the need to provide guidelines to group initiators and moderators, since most of them appeared to be using ineffective means of mediating the collaborative knowledge-building activity. A survey of the literature (explored later in **section 6.3**) also signals the inherent processes (what is done) and presences (environment or condition) that seem to best explain the mediation necessary for effective collaborative knowledge-building in online social networking settings. The desired outcome, however, emerges from the research and design process, and culminates in an e-mediating framework in Chapter 7.

Modelling the CAG Activity System

In this section I present an activity system analysis, using activity theory triangle notation to illustrate how the activity systems influence one another. Continuing to draw on the multiple plane analysis as supported by the work of Rogoff (1995), I present two planes of analysis: the learning design (personal) and the CAG (interpersonal) planes. In Chapter 3 have already I introduced the rationale for adopting this approach; it is therefore fitting to continue to illustrate the historical development of the activity systems. I begin the discussion at the personal plane (the learning design activity system–C) which represents a third instance or progression of the learning design activity system. This analytical approach builds on the historical development of activity system (Engeström 1987). The learning design activity in this cycle (see **Figure 6.1**) repeats the object and outcome of the CEN activity system from CEN activity system – B Cycle 2.

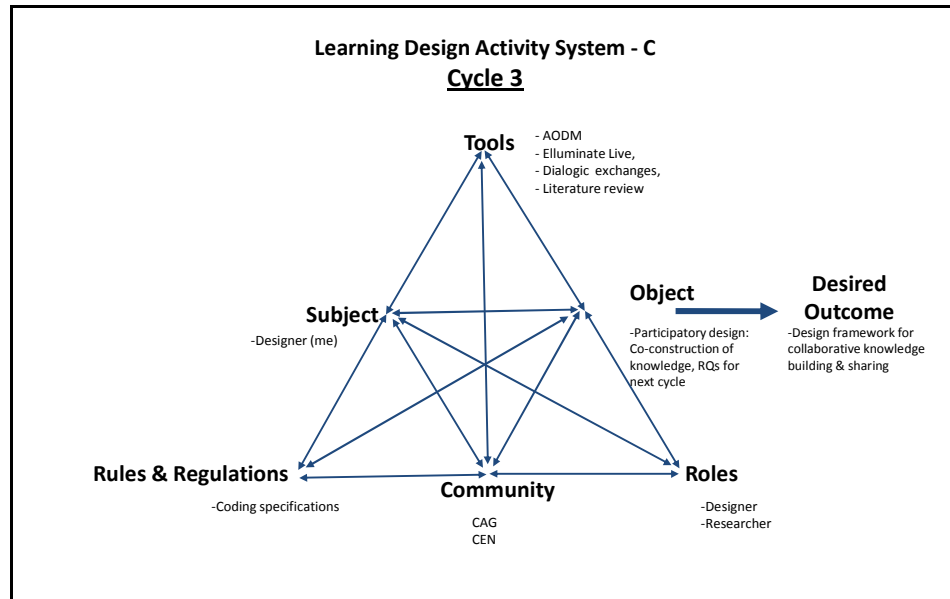


Figure 6.1 - The activity system before design intervention

From **Figure 6.1**, it can be seen that the desired outcome of a framework stimulates the participatory design activity. This activity is mediated by a number of components within the activity system. When decomposed these mediators - the tools, rules and roles - give an idea of the mediating presence needed to achieve the design object. Thus, transforming the object into the desired outcome gives even

more impetus to the design activity, and it is through this mediation process that transformation is made possible. It follows also that transformation of object to outcome requires the active mediation from the community (CEN, CAG), rules and regulations (the coding specifications), the multiple roles performed within the activity system, and tools used by members in the community to meet the desired outcome. From the learning design perspective, Elluminate Live, AODM, Literature review and dialogic exchanges or computer mediated communication become tools positioned within a learning design approach.

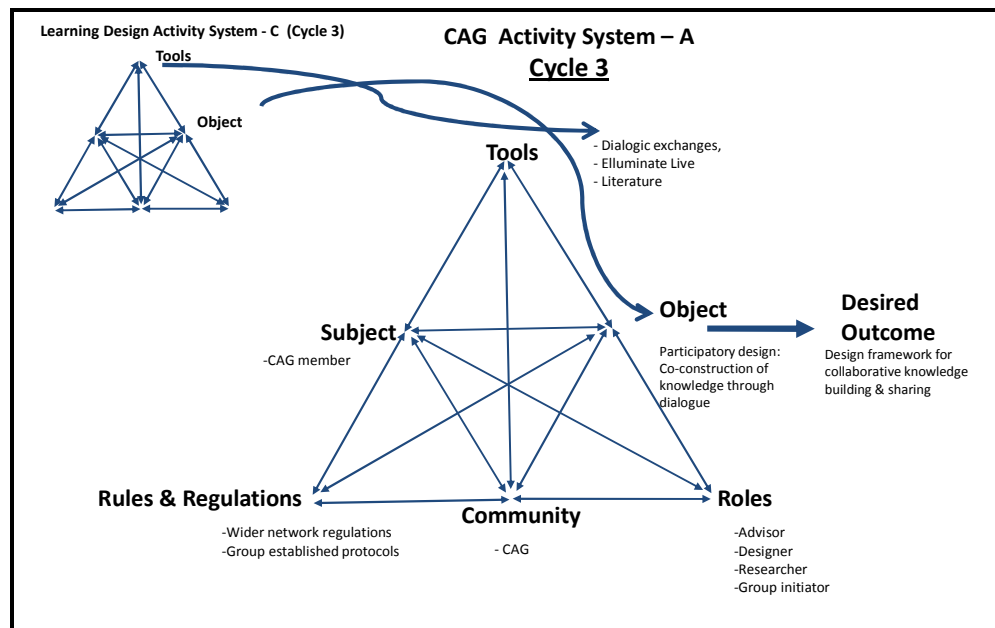


Figure 6.2 -The CAG activity system

At the interpersonal level, **Figure 6.2** reveals how the CAG activity system is influenced by the learning design activity system (top left) from cycle 3. Thus, both activity systems share the same object (participatory design). The tools from the learning design activity system now become the tools used by the CAG activity system. This, therefore stresses the nested and interlocking nature of activity systems where my learning design role is embedded within the CAG activity system.

The activity system analysis presented above provided a way to visualise the interactions and relationships within the activity systems as a dynamic and complex process. In the next section I shall focus on the participatory design dialogue that formed part of the synchronous sessions conducted in Elluminate Live, as a way to make sense of the design activity

Making sense of the Participatory design approach in the CAG

The context

Thus far I have explored the AODM as a way of making sense of the nature of the CAG. In this section I am taking on my role as researcher as I render a more detailed account of the dialogic activities conducted within the group: I focus on the discussions that emanated from the group as a way of evidencing how I made sense of the group contribution to the development of the emerging framework. To address this, I coded one synchronous session of the discussion within the CAG. Utilising this approach allowed me to highlight the design suggestions offered by the group, while at the same time focusing on the process and presences that existed within the transcript. Using an open coding approach, I coded the transcript of an Elluminate Live synchronous discussion session. Three individuals communicated using Elluminate Live audio, while one member used the chat room owing to technical constraints in using the microphone. In the transcript (see **Appendix 2**) the chat dialogue was preceded by the time stamp of the discussion, while the audio dialog was preceded by the speaker. A total of four CAG members participated in the live event, which lasted for over an hour. **Table 6.9** summarises four synchronous sessions that took place from October 18 to December 12 2009 to provide the context for the coded session. Between two and four members took part in these sessions. The session on November 28 2009, served as the transcript that was coded. I describe the coding and analytical process in the subsequent section.

Table 6.9 - Summary of meetings conducted in Elluminate Live

Date	# of members	Length	Outcome of session
Oct. 18 2009	2	53 min 6.1.1	<ul style="list-style-type: none"> - Members made aware of action research resources available on site - Decision on cooperative inquiry as a way of working together in the group - Decision on the protocols of meetings and sessions

Nov. 7 2009	3	1:20	<ul style="list-style-type: none"> - Proposal that framework/guidelines should be collaborative, less rigid, generic objectives that will work across subject areas with aim to improve student learning - Focused on group structure: ownership & roles; leadership & communication, shared leadership
Nov. 28 2009	4	1:19	<ul style="list-style-type: none"> - Confirmation of tension in CAG in the way 'framework' is used - Suggestion: structure in network to include thematic forums eg. research, professional development and leadership. Decision: An open education framework should be adopted - Confirmation that Elluminate Live was suggested as preferred tool of conducting network wide sessions
Dec. 12 2009	4	1:08	<ul style="list-style-type: none"> - Agreement on the term, 'framework' to describe CAG activity - Confirmation of the choice of roles, moderators – thematic forum - Decided on protocols needed to mediate activity - Confirmed the welcome statement for wider network and that moderators would need to revisit protocols during synchronous sessions - Decided how site would be promoted -press release, articles, twitter etc - Proposal that CAG should facilitate individuals who would like to do activities in network - Confirmed invitation of guest from Wikieducator organisation; introduced group to Open Education framework

The coding process

An outline of the coding process was introduced in Chapter 3. Stahl (2006) recognised communication within the group as the focus of analysis, but did not provide explicit guidelines in coding for group meaning-making. This section describes the coding approach used in this cycle. Krippendorff (2004) and Cohen et al. (2007) recognized coding meaning from context as an approach that led to the generation and categorization of themes. Accordingly, using an inductive coding and data analysis approach (Corbin & Strauss 2008; Creswell 2009), I coded the unit of analysis for meaning using the sequence prescribed by Creswell (2009). The coding in this cycle therefore was a way of identifying patterns from the data. This resulted in the formation of categories of analysis from the emerging codes. I explored the granularity of the dialogue with the intention of evidencing the contribution of members in the participatory design process. As this was within the frame of group cognition, I did not focus on the individual statements in isolation,

but on the statements within the wider group context. The transcription of the synchronous session of November 28 formed the unit of analysis. I was mindful of coding the other sessions as well, but these, in contrast, did not yield a comprehensive set of data from which I could infer meaning. Besides, I found the advice of Wolcott (2008) and Cohen et al. (2007) helpful in supporting a reduction of the data on which to focus. The transcript consisted of live audio and text from the chat room of the session. The transcribed data were imported into Atlas.ti, where it was analysed and coded for meaning. Atlas.ti, described in Chapter 3, is a software for qualitative data analysis. As I was making use of an inductive approach, I read the transcript and coded each message unit for meaning. In some cases, dialogue was coded with more than one meaning. The coded transcript was then interpreted and processed to identify the frequency of codes. **Table 6.10** gives a listing of the codes that emerged from this coding exercise. The group discussion focused on finding a way of guiding group initiators to sustain the collaborative knowledge-building activity within their groups. To provide clarity, operational definitions are included in the table.

Table 6.10 - Codes from transcript of synchronous meeting Nov. 28 2009

Codes	Operational Definition	Count
Reflective statement	Reflective statements; Statements that evaluated personal views; placed value judgement on self; Personal referencing statements	23
Design suggestions	Statements about how things could be implemented; Statements recommending design interventions	22
Response to item raised	Statements responding to an item or statement raised	14
Soliciting response	Statements showing interest in knowing more; Requesting a response or knowledge sharing	12
Asking a question	Direct questions also soliciting a response	11
Referencing a technological tool	Statements suggesting a tool or technology; Making reference to tool or technology	10
Seeking clarity	Requests for further explanation on statement	9

Critically responding	Statements that displayed knowledge or experience, expertise	6
Negotiating time	Statements asking for more time, suggesting extension of time	5

See Appendix 7 for complete listing of codes

An analysis of coding activity

The following section demonstrates how I interpreted the discussions to arrive at the codes in **Table 6.10**. Evidence of how the data were coded is presented in snapshots in **Figures 6.3–6.6**. Following this is a table of design suggestions that emerged from the coding activity.



Figure 6.3 – Coded discussion

In **Figure 6.3** the suggestion to have generalised forums within the network is coded as a 'design suggestion'. This design suggestion in some way implied a tighter control on whom would be able to create groups within the CEN. Up to that point, any CEN member could create a group and invite individuals to join. The suggestion to have fewer restrictions and less structure so as to not deter members who might not identify with the goals of the group should also be noted.

	a way forward as well . I don't know if I am making sense] reflective statment or comment
	[am] [reading from chat log] Bert says I have a series of	
	activities which can be implemented in CEN look...[see log entry below]...go head Mille	
088	24:46 - Bert	
089	I have a series of activities which can be implemented on] design suggestions pushing personal objective design suggestions
090	CEN. We can look at how those activities fit our nascent	
	framework. Start with the activity and use that to form the framework. I like that better than starting with the	

Figure 6.4 – Coded discussion

In **Figure 6.4** we see examples of 'reflective statement', 'design suggestions' and 'pushing personal objective'. Bert's statement, for example, is both a design suggestion and a purpose for his involvement in the participatory design activity. This statement is based on Bert's position and role in a non-profit organisation of volunteers, which seeks to provide training for educators (see **Table. 6.2**).

207	Mille: 50:47	
208	I think there are the same...because you cannot discuss] critical response to argument reflective statment or comment response to item raised
209	roles without leadership ...remember this is my view coming hindsight. [laugh] you may have had different discussions...	

Figure 6.5 – coded discussion

In **Figure 6.5** Mille's statement is coded as 'critical response', 'response to item raised' as well as 'reflective statement'. The statement, "I think [they] are the same", is a judgement based on personal values or knowledge, and therefore is coded as a critical response. Additionally, the speaker's "Remember this is my view coming hindsight", is an evaluative statement which hints that the view presented is potentially limited. This is coded as a reflective statement, which covers personal positional views.

225	LeRoy 4:23	
226	The thing is I don't think I own the community and that is	
227	one of the dilemmas I had to come to grips with..its	
	something that is [Jean 54:34 Right] [pause] mutually	☀ reflective statment or comment
	owned and I think one of the things that I can advertise the	☀ response to item raised
	ultimate goal and I think that's where the participatory	
	element comes in [Jean 54:45 ok] I think my role here is	
	trying to guide things along, facilitate sharing along...taking	
	a back step ...the more I put myself into this the engrained	
	I remain into it and the less others and I think the more	
	others are part of it the more it becomes participatory it	
	becomes them [meaning us] rather than me I think that's	

Figure 6.6 – 'Reflective statement' coded discussion

Figure 6.6 shows the coded reflective statement dialogue in which the speaker, LeRoy, makes repeated 'I think' statements.

The analysis provided a glimpse into the group meaning-making process, which resulted in a number of codes (see **Table 6.10**) with 'reflective statement' as the most frequent. Other codes such as 'response to item raised', 'soliciting response' and 'asking question' suggested processes that I shall return to later to make sense of in the next cycle (Chapter 7). Nonetheless, I focused on the design suggestions that emanated from the coding activity, as it made sense to do so. The 'design suggestions' code, the second most popular, served as a means of contextualising the interventions that members from the CAG considered suitable for sustaining collaborative knowledge-building in the network. It also furnished me with an avenue through which I could acknowledge the contributions of the CAG who gave suggestions for the way forward in the network.

Design suggestions

Table 6.11 outlines the coded design suggestions, the description of these suggestions, and the link to categories that the code suggests. The explanation of each code was inductively ascribed from the transcript. Following this, I linked each design suggestion code to categories that each signified in order to infer relationships from the data. This was not an arbitrary action, but it was done in

response to the data as a way of grounding the analysis in the context of the data and on my reflection on the literature.

Table 6.11 - The design suggestions that emerged from analysis

Design suggestion	Description	Categories
Thematic Forums	Moderated forums from 3 to 4 generalised themes or topics as opposed to where anyone can create groups	Framework suggestions; Guidance; Moderating
Moderators for thematic forums	Role of moderator for thematic forums. Members can propose someone to serve as moderators of the thematic group. This can serve as a way of sharing the CEN- wide responsibility	Role definition; Guidance; Moderating; Framework suggestions
Generate Activity	Encourage volunteers to start a number of activities as they see fit	Moderating; Guidance; Flexible framework suggestion
Guidelines for Group Initiators	Group initiators need help initiating activities. Suggested that group outcomes in the form of questions could help. The object of the group should be embedded in the group guidelines	Guidance; Moderating; Framework suggestions
Teacher training forums	Inviting educators from University of West Indies to host events in CEN. Groups can make use of CEN tools to conduct regional meetings. If CEN provides the tool that enables collaboration, then that can generate some activity	Tool use with specific purpose; Guidance, moderating; Institutional links; Event hosting; Tool accessibility
CEN country rep	Identify a person from each country who would serve as CEN ambassador, be responsible for promoting the community, and also moderate a group of interest	Framework suggestions; Guidance; Moderating; role definition
Framework will be generated from activity	That we should focus attention on generating activity, then the guideline would emerge from the activity	Flexible framework suggestion; Activity focused
Focus on generating activity as well as guideline or framework	The focus should be on generating activity as well as developing the collaborative knowledge-building framework	Flexible framework suggestion; Activity focused
Framework should be flexible with fewer restrictions.	That framework or guide should be facilitating activity not restricting it	Flexible framework suggestion
Make goals of CEN clear and visible	The object of the CEN should be added to site structure	Network design suggestion; Sharable and visible CEN objective
Encourage collaborative, participatory	Advisory group should encourage and facilitate individuals who would like to engage in collaborative activities in the	Guidance; Role definition

activity	CEN	
Encourage technology integration	Provide a focus on technology in education (professional development, schools)	Technology mediation; Tool use with specific purpose; Tool accessibility

Highlighted suggestions signify the need for a framework for mediating collaborative knowledge-building

Admittedly these design suggestions revealed specific design actions that formed part of the larger design process, but they fell short of advancing a clear framework for mediating the collaborative knowledge-building within groups in the CEN. However, the mapping process provided a glimpse into the relationship between the designs suggestions and the processes and conditions they implied. Additionally, the highlighted categories in **Table 6.11** substantiated the wider design agenda of focusing on collaborative knowledge-building within group settings. Further investigation of **Table 6.11** revealed that 7 of the 12 design suggestions indicated the need for 'guidance' as part of the collaborative knowledge-building framework within groups. Likewise, the position of the category, 'moderating', the second most popular in the count, signified its role in the emerging framework. The instances of 'moderating' and 'guidance' are in the frequency displayed in **Table 6.12** where the categories, 'Guidance' and 'Moderating', are highlighted.

Table 6.12 - Count of categories from Table 6.11

Category	Count
Guidance	7
Moderating	6
Flexible framework suggestion	4
Framework suggestions	4
Role definition	3
activity focused	2
Tool use with specific purpose	2
Event hosting	1
Institutional links	1
Network design suggestion	1
Sharable & visible network objective	1
Technology mediation	1
Tool accessibility	2

The frequency count of the categories, 'Guidance' and 'Moderating', suggests the need for support and assistance within the collaborative knowledge-building setting. However, collaborative knowledge-building is more than just guidance and moderating; it is more a process-oriented view (Dillenbourg et al. 1996), focused on understanding the processes and presences as variables in mediating interaction. Guidance and moderating therefore were considered at this stage of the research as conditions or presences and meta categories in which other processes were embedded. This provided the background for exploring the literature, and further exploration in the next cycle. Moreover, the advice of Dillenbourg et al. (1996) provided me with the motivation for advancing the concept of processes and presences within a collaborative learning framework as the design challenge in cycle 4 (Chapter 7). Before I address this design challenge, though, I pause a moment to reflect on the literature that provided a basis for theorising the nascent framework for mediating collaborative knowledge-building in CEN groups.

6.3 Reflection: Literature Discussion

In Chapter 5 I introduced the concept of group cognition (Stahl 2005; Stahl 2006) as a conceptual framework that best explains the type of interaction and learning that takes place within collaborative knowledge-building in online social networks. While group cognition is helpful in understanding knowledge-building in groups, it lacks a clear methodological frame to carry out exploration of collaborative knowledge-building in situ. Thus in this reflection, I propose the development of a more inclusive frame to serve as a mediating artefact in making sense of collaborative knowledge-building in groups. I draw on group cognition (Stahl 2005; Stahl 2006), activity theory (Leont'ev 1978; Engeström 1987), community of inquiry (CoI) (Garrison et al. 2000) and the work of Henri (1992) to propose a conceptual framework for investigating collaborative knowledge-building within the CEN. Since some attention has already been proffered to group cognition and activity theory in Chapter 2, I shall focus in the next section on the CoI framework.

The Community of inquiry framework

While there are many references to communities of practice and learners in the literature see (Rogoff et al. 1996; McCaleb 1997; McLoughlin 1999; Wenger 1999;

McDonald et al. 2008), I find the notion of community of inquiry (Garrison et al. 2000) helpful in thinking about the processes and presences that make for sustainable collaborative knowledge-building in the online setting. Although the framework may not be applicable in all cases, it provides a helpful way of conceptualising learning in online contexts (Garrison & Arbaugh 2007). The framework has been applied in various studies (Anderson et al. 2001; Garrison et al. 2001; Shea 2007; Arbaugh et al. 2008; Akyol et al. 2009), all of which make clear reference to the way it is used as a tool for analysing the interaction and participation in online settings. Despite this widespread use, the framework remains a challenge to apply in informal online social network settings. A review of the literature found that it has not been applied in online learning settings where the focus is on collaborative knowledge-building.

The underpinning assumption of the CoI framework supposes that there are three overarching themes: Teaching presence, Social presence and Cognitive presence (Garrison et al. 2000). While this framework is supported by a number of research studies (Shea et al. 2010) in mediated online e-learning in academic institutional contexts, there is need to support and adapt this framework in new and different settings to further test its applicability (Garrison et al. 2010).

Teaching presence

I begin my delineation of the teaching presence with what Anderson et al. (2001, p.5) define as the “design, facilitation, and direction of cognitive and social processes for the purpose of realising personally meaningful and educationally worthwhile learning outcomes”. Teaching presence is presented as a precursor to the cognitive and social presences, and is further divided into three categories which are also indicators of measurement of the sense of teaching presence in communities. These are presented as design and organisation, facilitating discourse, and direct instruction. The design and planning process is recognized as “more extensive and time-consuming than the analogous process in classroom based teaching” (Anderson et al. 2001, p.5), and includes the planning and creation of curriculum teaching aids, notes, commentaries and mini-lectures, as well as effective monitoring and negotiation of timelines for learning activities and projects

(Anderson et al. 2001). The facilitating discourse sub-category finds some common ground with similar work done by Pask (1976) and Laurillard (2000), and is recognised as a critical component in maintaining interest motivation and engagement of individuals in active learning (Anderson et al. 2001). This sub-category further advocates that teachers actively and regularly read and comment on student activity; support and encourage student participation; resolve conflicts and encourage consensus; and model appropriate behaviour and the practising of good time management skills (Anderson et al. 2001). The final section in the teaching presence is called direct instruction which focuses primarily on the role of the teacher in ensuring that the intellectual climate is established and maintained. In direct instruction, using aspects of apprenticeship (Rogoff 1990) and scaffolding (Wood et al. 1976), are used to build a case for teachers leading the intellectual and cognitive process within groups. This form of instruction holds up the teacher as the subject matter expert in the process of presenting content and questions, summarising discussions, confirming understanding through feedback and assessment, recommending knowledge from various sources and responding to technical issues (Anderson et al. 2001).

Social Presence

Social presence in an online learning community is defined as the capability of learners to deploy mediated communication to portray social and emotional characteristics that identify them as 'real people' (Garrison et al. 2000b). Three broad indicators or categories of social presence are identified in the literature: affective, interactive and cohesive responses which constitute the basis on which the social presence of online learning communities is evaluated. Instances of low frequencies "indicate that the social environment is cold and impersonal...while high scores indicate that the environment is warm and collegial" (Rourke et al. 1999, p.8). Affective responses refer to the use of a number of communicative artefacts such as humour, emoticons, and self-disclosure, while interactive responses take into account the use of simple actions such as replying to comments, quoting directly from comments, and referring specifically to the contents or comments of others (Rourke et al. 1999). The final indicator category, cohesive responses, is identified by activities that build and sustain a sense of group commitment, and includes aspects such as phatics (communication used to express feelings and

moods) and salutations, vocatives (addressing community members by name) and addressing the group as “we”, “our”, or “us” (Rourke et al. 1999). An important aspect of social presence is the emphasis on collaborative work. Garrison and associates stress that

Social presence marks a qualitative difference between a collaborative community of inquiry and a simple process of downloading information. The difference is the quality of the message; in a true community of inquiry, the tone of the messages is questioning but engaging, expressive but responsive, skeptical but respectful, and challenging but supportive. In such a collaborative community of learners, social presence is enhanced. When social presence is combined with appropriate teaching presence, the result can be a high level of cognitive presence leading to fruitful critical inquiry.

(Garrison et al. 2000b, p.96)

Cognitive Presence

Cognitive presence is recognised as the degree to which members within a learning community use prolonged computer mediated communication to construct meaning (Garrison et al. 2000); it forms a central part of the inquiry process within online learning communities (Garrison et al. 2001). What makes this model interesting is its reliance on the practical inquiry model, which supports the whole notion of critical reflection as part of collaborative knowledge construction within online settings. As such, this framework builds on the work of Dewey (1933) and adds credence to the cognitive presence as a critical and reflective process through critical discourse. It is also recognized that cognitive presence can be developed and sustained in online settings where effective teaching and social presence are evident. Using the practical inquiry model, the authors identify four sequential stages or indicators: triggering event, exploration, integration and resolution.

The CoI framework in the CEN context

Although the CoI is a tried and tested framework for understanding the social, teaching and cognitive presence, there remain some uncertainties concerning its applicability within alternative contexts where there is a heightened sense of collaborative informal learning (Garrison et al. 2010). Another aspect of the CoI that deserves some attention is its reference to the notion of presence. Although Garrison et al. (2000) present teaching presence as a guiding principle for the other processes, their focus on presences continues to underplay the inherent dynamic

processes required for understanding the relationships necessary for the development of effective presences (Garrison et al. 2010). Thus, while I find some comfort in the use of the conception of presence in the creation of being within the social, cognitive and teaching dimension, in my estimation such an emphasis on presence diminishes the role of the inherent processes necessary for the presence to flourish. However, Garrison et al. (2000) present a number of subtle cues to the processes and sequences needed in the development of an online learning community. For example they state that the “cognitive presence...is more easily sustained when a significant degree of social presence has been established” (Garrison et al. 2000, p.95). This suggests that both processes (what is done) and presences (the conditions or environment) are a necessary part of the framework for sustainable online learning communities. Therefore the design for learning of a Community of Collaborators (CoC) for knowledge-building should take into account the collaboration, dynamism, complexity and fluidity that typify activities in such online social networking environments. Arguably, the CoI framework is best applied in academic settings, and applying it universally without the consideration of context would be futile. However the CoI, being a tested framework, provided an ideal foundation to adapt to the present research context. In the following section I present an initial idea of what I deem as presences within the CEN mediating collaborative knowledge-building framework.

Initial Theorisation of the mediating framework

To understand effective collaborative knowledge-building in the research setting, I pay attention to the mediating artefacts that make for meaningful collaborative knowledge-building within a CEN group. These mediating artefacts are recognised broadly as processes and conditions as a unifying concept (Dillenbourg et al. 1996). Therefore, in order to develop the collaborative knowledge-building framework, a number of processes and presences need to be identified and highlighted. Cole & Engeström (1993) argue that there are three factors that affect the accomplishment of the object within an activity system. These include (1) the tools used by members and the community (2) the community that members belong to, particularly with regard to the norms and practices of that community and (3) the division of labour in the communities, to which are also linked aspects such as roles and responsibilities and communication processes. These factors point to broad

processes and presences that influence the realisation of the shared object within an activity system. As a result of reflection on the literature and the research exploration in this cycle, I present six general themes that are a synthesis of aspects of CoI, group cognition and activity theory as a starting point to advance the theorisation in the next cycle (Chapter 7). These themes are presented in **Table 6.13** below:

Table 6.13 – Themes with description and theoretical mapping

Themes	Description	Theoretical Mapping
Tools	The appropriation of tools in collaborative knowledge-building in establishing, managing interactions and connections as a process of 'Artefactization'	Activity Theory
Moderating	Moderating the collaborative knowledge-building activity; Establishing roles and rules for moderating activity	Activity Theory
Reflective	Self and group evaluative dialogue; Metacognitive statements	Group Cognition, CoI
Community	A sense of identity and purpose; Group formation	Group Cognition, CoI
Social	Facilitating social interaction through open and welcoming dialogue	Group Cognition, CoI
Cognitive	Co-construction of knowledge; Negotiating group knowledge; Perspective sharing; knowledge negotiation	Group Cognition, CoI

As this is a historical account of the learning design activity, I include a design representation of the embryonic collaborative knowledge-building framework (see **Figure 6.14**). Conole (2010) describes design representations as useful devices in representing aspects of learning that designers anticipate. This design representation will be further discussed and developed in the next cycle (Chapter 7).

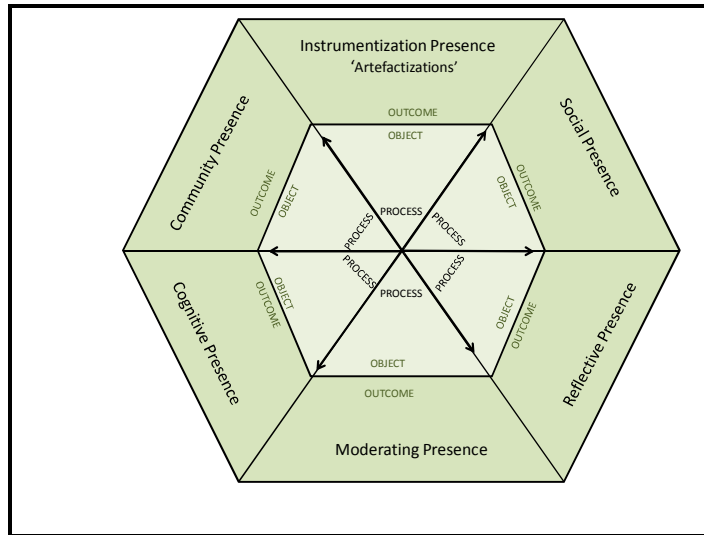


Table 6.14 - The 1st iteration of the CEN e-mediating framework

6.4 Conclusion: The Way Forward

This cycle served as a look into the CAG as the participatory group that evolved in the CEN. The chapter focused on gaining an insight into the nature of the group and group activity. While the focal point in this cycle was the CAG, the emphasis of the research is the exploration of a framework to mediate collaborative knowledge-building within groups as revealed from the cycle 2 analysis (Chapter 5). The chapter was also an attempt at applying group cognition as a theoretical frame in understanding the negotiation and group meaning-making process. However, as meaning-making was seen as a group activity it was difficult to operationalise this methodologically as a single coder. This pinpointed the need for a way to inter-subjectively make sense of group cognition, a need explored in the next cycle (Chapter 7). Nonetheless, this cycle was useful in advancing the wider research question, and it afforded me the opportunity for further reflection on the literature. The focus was more on providing an understanding of the nature of the CAG characteristics and activities, and less on an exploration of the processes and presences. For this reason, I did not find it necessary to use this conceptualisation in reanalysing the CAG transcript.

In this chapter I have explored the CAG as the participatory design group. Deploying an activity theory interpretation of the group, I provided a short account of how I made sense of the discussion through content analysis of synchronous group discussions. A number of themes surfaced which showed the need for further exploration of the literature. The process also resulted in a number of useful design suggestions for the network. This development supports the position that there are processes and presences that shape collaborative knowledge-building within CEN groups. These will unfold in the next cycle (Chapter 7) where I shall seek to confirm the processes and presences by working collaboratively with members of the CAG to code a unit of asynchronous group communication. Additionally, I shall return to activity theory (Leont'ev 1978; Engeström 1987), group cognition (Stahl 2005; Stahl 2006) and CoI (Garrison et al. 2000) as mediating artefacts that advance the theorisation of the framework. These theoretical frames beckon with the promise of helping me make sense of presences and processes within online collaborative knowledge-building.

7. Chapter 7

Exploring the CEN Collaborative Knowledge-Building e-Mediating Framework

Introduction

Chapter 5 pointed to the need for a method of identifying the processes (what is done) and presences (the condition or environment) that mediate the collaborative knowledge-building activity within groups. In response to this, I introduced the CEN Advisory Group (CAG) as a group that evolved in response to a need to address the research challenges identified in cycle 2 (Chapter 5). I presented the nature of the group through an activity theory lens, and I also provided an example of the participatory design activity through the coding of synchronous computer mediated

communication. A number of design suggestions such as guidance and moderation emerged from this activity. These themes supported the focus of the research, which was a framework to mediate collaborative knowledge-building in the CEN. This chapter sets out to accomplish three tasks: (1) Record the work of three members of the CAG group and one individual from wider CEN who independently coded the same unit of analysis as a means of identifying the processes and presences from the asynchronous computer mediated communication of a high performing group. (2) Explore the larger learning design research question; but in this cycle I am going to focus on a participatory approach to analysing the collaborative knowledge-building interaction in a CEN group. I describe the group coding context and processes that led to the inter-subjective interpretation of processes and presences derived from transcribed data (text). The result of this activity is used to build an argument for a framework for mediating collaborative knowledge-building within the CEN. I build on the notion of mediation as a key element of collaborative knowledge-building, which I refer to as the e-mediating framework. (3) Continue to draw on activity theory to interpret the multiple plane analysis as a way of building on the previous applications. I use activity theory (Leont'ev 1978; Engeström 1987), Henri's (1992) framework, group cognition (Stahl 2005; Stahl 2006) and the community of inquiry framework Garrison et al. (2000) as mediating artefacts in the further development of a framework for mediating collaborative knowledge-building in the CEN. I also interrogate and explicate the core themes that emerged from the previous cycle. At this point it is incumbent on me to address the planning that contextualised the research activity for this cycle.

7.1 Planning: The Action-Cycle Design Process

The planning context

This planning section focuses on the inquiry process of this cycle that is portrayed in the following account of the plan that informed the research inquiry. The methodological inquiry focuses on the Diversity of Learning group, an eight-member collaborative knowledge-building and sharing group within the CEN which is described in detail later in the chapter. As a member of the group, I had the

privileged insider's perspective of participant-as-researcher. The implication of this role was explored in Chapter 3. In the next section, I provide further details of the planning.

The Analytical framework

Objective

To identify the processes and conditions from the asynchronous dialogue in the Diversity of Learning group by using an inter-subjective content analysis approach.

General Research Question

What is the nature of a learning design approach for exploring a framework for mediating collaborative knowledge-building in the CEN?

Cycle 4 Research questions

Research Plane

What processes and conditions mediate the collaborative knowledge-building in the Diversity of Learning group?

Design Plane

How is a participatory design approach applied in making sense collaboratively of a framework to mediate collaborative knowledge-building in the CEN?

The methods of data collection

The methodological inquiry process for this cycle is summarised in **Table 7.1** below.

Table 7.1 – Methods and timeframe

Research Questions	Data	Methods of analysis	Timeframe
What processes and presences mediate the collaborative knowledge-building in the Diversity of Learning group?	Text	Content analysis of asynchronous dialogue transcripts; Survey of Literature	Jul 29 2010 to Dec 18 2010

How is a participatory design approach applied in making sense collaboratively of a framework to mediate collaborative knowledge-building in the CEN?	Text	Observation of participation and interaction; Activity system analysis; Survey of Literature	Jul 29 2010 to Dec 18 2010
---	------	--	----------------------------

7.2 Acting: Observing and Analysing Process

The Context: The Diversity of Learning Activity System

The Diversity of Learning group, created on May 22 2009 by Bert (see **Table 7.3**), was introduced earlier as the group of focus in this research cycle. The group was so named because members focused on issues pertaining to disability and diversity of learning. There were three underlining reasons for choosing the group: Firstly, my membership and involvement in the group bestowed on me an insider's perspective on the collaborative knowledge-building process. This insider's perspective provided me with a deep understanding of the context that enhanced the meaning-making process in this cycle. Secondly, this group was the group with the highest level of participation (see **Table 5.3 & 5.4** Chapter 5) within the CEN. Thirdly, my observations revealed that effective sharing and building of knowledge was taking place in the group. As a member I benefited from the collaborative knowledge-building process. What is more, I had consent from group members to draw on their interaction and participation within this research project. **Figure 7.1** gives an overview of the entire Diversity of Learning activity system.

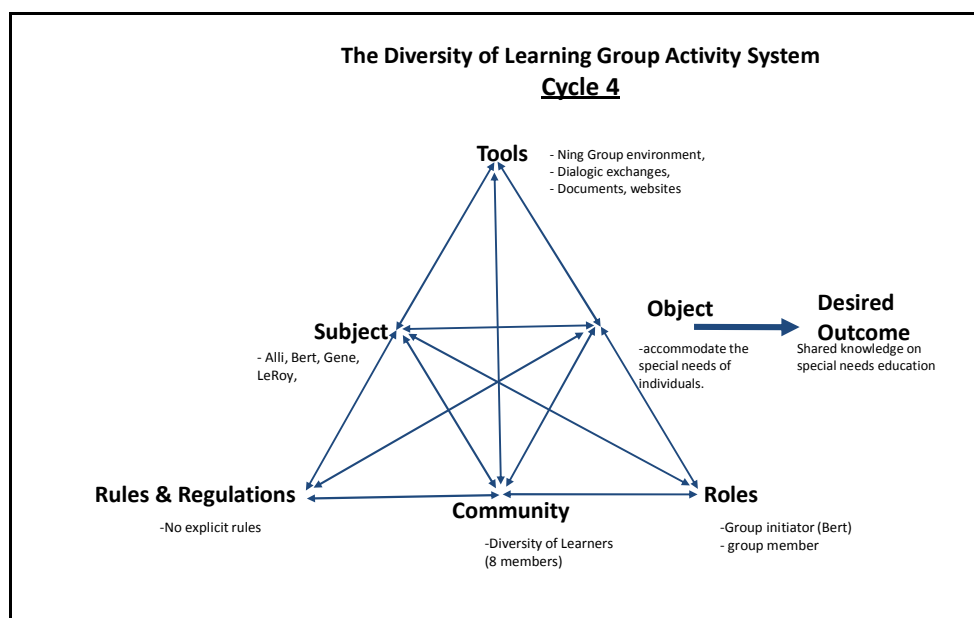


Figure 7.1 – Diversity of Learning group activity system

At the time the data was collected, the group comprised eight members, but only four of them interacted within the group, as is evidenced in their discussions in the forum. Computer mediated communication provided the basis for understanding the collaborative knowledge-building between these four members (Alli, Bert, Gene, LeRoy). Most of the dialogue, however, was between Alli and Bert. **Table 7.2** gives a breakdown of the members who formed part of this investigative focus. Both Bert and LeRoy were members of the CAG.

Table 7.2 – Profile description of Diversity of Learning group members.

Members	Alli	Bert	Gene	LeRoy
background	Language teacher (Spanish & French) at secondary school for 25 years; Vice principal; Interests in teacher development, technology in education and foreign language teaching	Retired professor of neuropsychology emphasis on learning disability and individual differences in thinking style; Interests in disabilities, lifelong learning, Excel in Mathematics education, Statistics, online platforms and tools	Mathematics educator for 22 years at secondary school; Interests include curriculum, instruction and administration	Humanities educator for 13 yrs. at secondary school; Interests in curriculum & instruction, social exclusion, e-learning, social media, technology education, open education, CPD

In the next section, the description of the participatory learning design process, explains how the interaction within the Diversity of Learners group was analysed.

The Participatory Design Process

This section is an account of the participatory design process. Here I present evidence of the group coding as the participatory design activity that resulted in a set of codes that led me, as researcher, to create an inter-subjective (combined) meaning of the interpretations. Here I use inter-subjective as a means of recognising the shared meaning-making process in the group coding activity. First of all, I present an account of the learning design activity system for this cycle.

The Learning Design Activity System

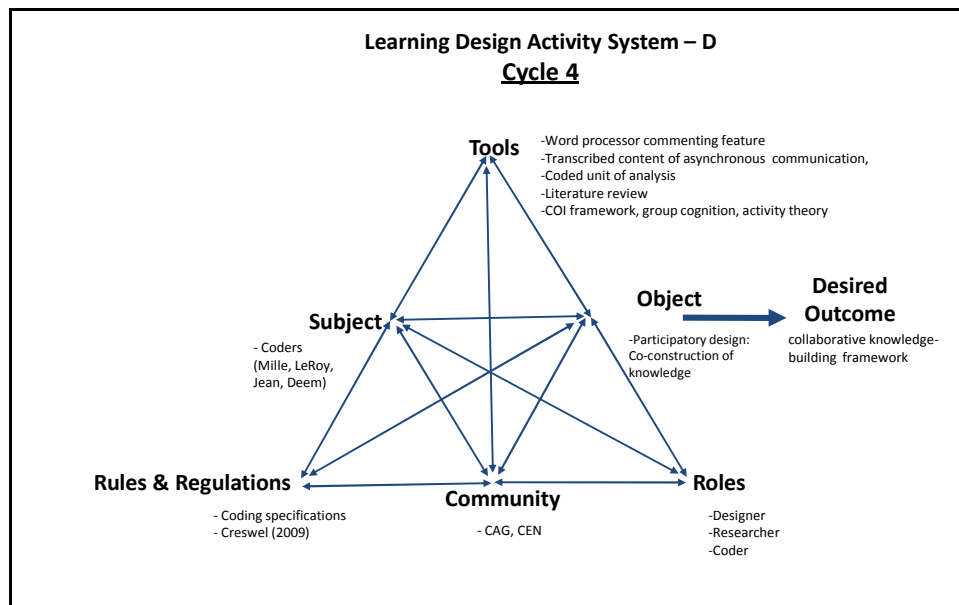


Figure 7.2– The learning design activity system - D

Figure 7.2 represents the learning design activity system for this cycle. The participatory design activity is represented as both a coding and an interpretation of computer mediated dialogue within the Diversity of Learning group. In this cycle I

took on the role of participant-as-researcher as well as coder (**subject** coder 5), and worked with a group of individuals (**community**) in co-constructing meaning (**object**) from the same unit of analysis (**tool**). That qualifies this cycle to be the most appropriate place in which to report on my roles of coder (**participant**) and researcher. As a participant-as-researcher I had an insider view of the context of the Diversity of Learning group, as indicated earlier. The unit of analysis, along with the coded meanings and the word processor, comprised the **tools** that facilitated the co-construction of meaning (**object**). This object of the design activity owed its existence to the need to develop the CEN e-mediating framework (**desired outcome**), and this desired outcome was known to all coders. I now turn the spotlight on the individuals who took part in the design or coding activity.

The coders

In this cycle, four individuals worked independently to code the same unit of analysis as a way of advancing a framework for mediating collaborative knowledge-building in the CEN. I shall give an account of this unit of analysis later in the chapter. **Table 7.3** gives a breakdown of the participants of this learning design activity. No coder, apart from LeRoy, was part of the Diversity of Learning group. Coders 1, 2, and 3 were from the CAG, while coder 4 was from the wider CEN.

Table 7.3 - Listing of Coders

CODER	1	2	3	4	5
NAME	LeRoy	Mille	Jean	Deem	Inter-subjective

In the coding activity, I started off as coder 1. Later, following the participatory design activity, I served as coder 5 in my capacity as researcher, and generated a set of inter-subjective codes that represented the combined meaning of the participatory design group codes. 'Inter-subjective' in this setting is used to represent the combined representation of interpretation, taking into account that the final interpretation from my perspective was always open to revision. This perspective also served as a technique for acknowledging inter-subjectivity as a group cognitive activity. Additionally, my active involvement in the Diversity of

Learning and participatory design groups provided a deep perspective that added value and richness to the process of meaning making. To address concerns of objectivity, I purposely invited a fourth coder (Deem) to code the same unit of analysis. Deem agreed to serve as the fourth coder and, like the other coders, independently coded the same unit of analysis. The approach in this cycle was not to quantify or find commonalities, but instead to explore, and make sense of the same activity independently yet collaboratively. The result of each coder's interpretation is found in **Appendix 4**, but a summary of the inter-subjective codes is provided later in the chapter (see **Table 7.4**).

The coding process

A transcript of asynchronous communicative discussion from the Diversity of Learning group formed the unit of analysis. Asynchronous computer mediated communication formed the basis of dialogue within the group. The transcript comprised computer mediated dialogue from May 22, 2009 to May 29, 2009 with a total of 21 message units. Four coders independently coded 21 message units for meaning. Using the message as the smallest unit of analysis, members utilised the comment feature of word processing software and coded each message unit for meaning from the transcript. The transcribed unit of analysis consisted of two threads of discussions. The first thread comprised message units 1-17, while the second thread comprised message units 18-21. The 21 message units were imported into word processing software where they were "organise[d] and prepare[d] for analysis" (Creswell 2009, p.185). I followed the other steps outlined by Creswell (2009), but as this was a group coding activity, I instructed the other coders to (1) read through the entire transcript to get a general sense of the dialogue and (2) code each message unit for meaning, so as to identify the processes and conditions (presences) that came out of the discussions.

As the fourth coder was not a part of the CAG discussions, he had to be briefed about the research context prior to the coding activity. The themes for the coding schedule emerged from the context, but were not exclusively delinked from established work, seeing that some of the themes occurred in the literature. Coding the data also forced me to think of an appropriate unit of analysis that could build on what had

been done before, and to ensure that there was some level of reliability in the process. I give this some attention in the next section.

The Unit of Analysis

In Chapter 3, I described the unit of analysis that was applied in the research context. I continued to use the message unit as the unit of content analysis in this cycle. A total of 21 message units constituted the unit of analysis in the research setting. Having different coders code the same unit of analysis provided me with a way to co-construct meaning inter-subjectively. As researcher, I summarised the codes in what I called the inter-subjective codes, and this provided a basis for valuing the voices of all coders in analysing the unit of analysis. This final coding represented a summation or synthesis of all the codes that originated from the coding activity. **Figure 7.3** gives a picture of the first two coding decisions of the four coders as well as the inter-subjective code (coder 5).

Message	Coder 1 (LeRoy)	Coder 2 (Mille)	Coder 3 (Jean)	Coder 4 (Deem)	Inter-subjective
1	Commendation, Concern for group activity, Interest in topic	Subject for discussion	Requesting information	Applauds group's initiatives. Concerned about particular interests. Invites discussion and suggestions. Shows eagerness to help others based on acquiring new knowledge expertise	Praise group; poses questions for knowledge-building and sharing;
2	Critical dialogue & questioning, Engaging language, Expert knowledge response, Explanation to previous comment, Posing questions, Reflective, Seeking clarification from post, Seeking comment	Elaboration on subject for discussion and request for clarification	Defining jargon	Expert opinion sharing. Open to new ideas and suggestions. Seeking clarity and inviting others to discuss and share. Seeking clarification	Seeking clarification; provide expert knowledge; inviting others in dialogue

Figure 7.3 – Snapshot code decision of 4 coders with inter-subjective code

The analysis of each coder is represented vertically in a table in **Appendix 4** and is summarised in **Table 7.4** as the set of inter-subjective codes. There is some level of agreement in the codes, therefore 'inter-subjective' here is used to mean a summary of codes: I looked at the four codes and collapsed them in a list of inter-subjective codes.

Table 7.4 – List of inter-subjective codes

Unit	Inter-subjective Code
1	Praise group; Poses questions for knowledge-building and sharing
2	Seeking clarification; Provide expert knowledge; Inviting others in dialogue
3	Explaining previous comment; Personal examples from experience; sharing resource
4	Sharing resource; Inviting responses
5	Analysing resource; Critical response to resource and post
6	Expert advice response; Analysing resource provided
7	Critical dialogue on subject; Further analysis of resource; provide further explanation
8	Seek networking and collaborative knowledge building and sharing; seeking clarification
9	Encouraging critical and reflective dialogue; Requesting further dialogue
10	Requesting knowledge-sharing and dialogue; Reflective dialogue
11	Reflective dialogue; Praise group efforts; Reflective dialogue
12	Provide expert advice; Provide examples from professional experience; Critical dialogue
13	Learning and questioning through critical dialogue
14	Providing explanation of previous post; Seeking clarification
15	Seeking knowledge; Sharing personal experience; Critical problem posing; Seeking knowledge-sharing
16	Provide clarification on discussion; Provide examples from experience
17	Sharing resource; Seeking response
18	Give clear purpose for activity; Sharing resource for co-construction of Knowledge
19	Requesting further explanation on subject
20	Share resource; Detailed response based on professional and real life examples
21	Detailed response based on professional and real life examples; Poses questions for reflection and knowledge-sharing

This collaborative meaning making resulted in a set of codes that seemed to suggest a link to a number of themes. Before I address the link between the themes and the

inter-subjective codes I shall indicate how the participatory design activity was analysed, drawing on the inter-subjective meaning as well as meaning from specific coders in order to illuminate the construction of the inter-subjective codes. It should be noted that this inter-subjective coding was a way of representing the voices of the other coders in the activity, rather than a reinterpretation.

An inter-subjective analysis of the collaborative knowledge-building and sharing activity

In this section I show instances of the combined interpretation from the unit of analysis. The meaning making process is present in the group coding activity where I value and represent the interpretation of the group rather than an individual coder. This inter-subjective meaning making process, therefore, is about developing a joint interpretation, created through information sharing and interaction among members in the activity (Göncü 1993; Stahl 2000; Suthers 2005). Drawing on the results of the coded unit of analysis and the meaning generated by coders (see table in **Appendix 4**), I interpreted the asynchronous computer mediated dialogue that formed part of the Diversity of Learning group. As a member of the group, I relate this story as a participant observer, and provide an account of the analysis of the discussions. I use snapshots of the coded transcript to help narrate my interpretation and also as evidence of how I co-constructed meaning from the data. Therefore, my interpretation is in relation to the wider knowledge-building group activity. I use the snapshots of only coder 3, but I represent a combined account in the text.

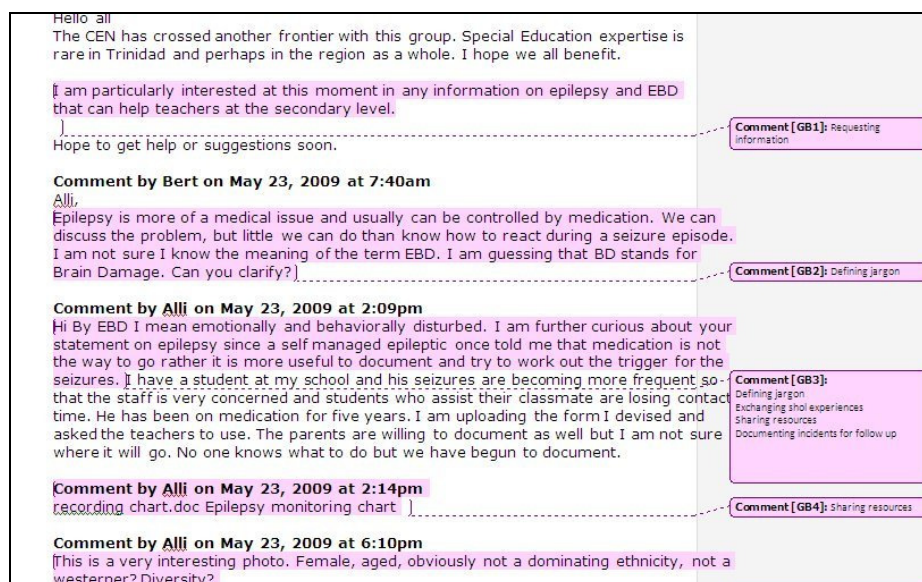


Figure 7.4 – Message unit 1-4

The interpretation starts with a look at the purpose of the group with Bert (group initiator) outlining the focus of the collaborative knowledge-building activity. **Figure 7.4**, for example, shows commendation for the focus of the group when Alli comments that Special Education is rare in his country. Interestingly enough, coder 3 identifies message unit 1 as the process of 'requesting information', while coder 2 identifies this message unit as 'subject for discussion'. In responding to the request in message unit 2, Bert shares 'expert knowledge' (coder 1) on epilepsy and 'seeks clarification' for the abbreviated phrase, 'EBD', used by Alli in the first message unit. Alli responds in message unit 3 (**Figure 7.4**) by explaining the abbreviation, but expresses concern over the explanation given by Bert in message unit 1, where Bert describes epilepsy as a medical issue. In message unit 4 Alli shares a copy of a 'student monitoring record'. While this is coded as 'sharing resource' by coder 3, coder 1 sees this as 'invoking response' as well as 'sharing resource'. Coder 4 sees message unit 4 as 'continuing the discussion by sharing more sources and inviting responses'.

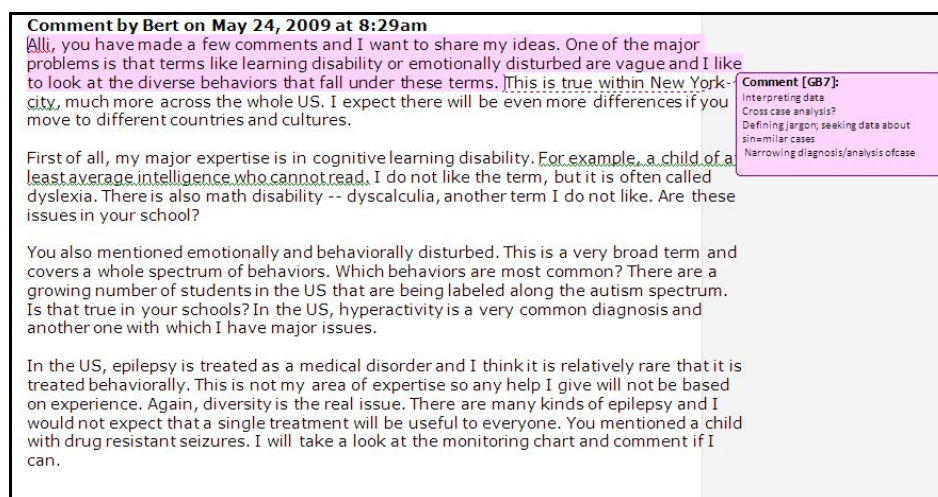


Figure 7.5 – Message unit 7

Message units 4, 5 and 6 report the analysis of the photos shared among the group, and in message unit 7 (**Figure 7.5**), Bert returns to responding to Alli's request. Coder 2 categorises this as 'seeking clarity of subject' and 'providing explanation on subject'. Coder 3 sees this message unit as an example of 'seeking data about similar case', and as a form of 'interpreting data' using a 'cross case analysis' approach. In Coder 4's judgment, however, this message unit is an 'explanation of point of view' which shows 'sensitivity to cultural differences'. Coders 2, 3 and 4 agree that message unit 7 is a form of seeking clarification about the issue raised. It cannot be denied that, besides providing critical dialogue on the subject matter, the combined coded meaning furthered the analysis and explanation of the statements.

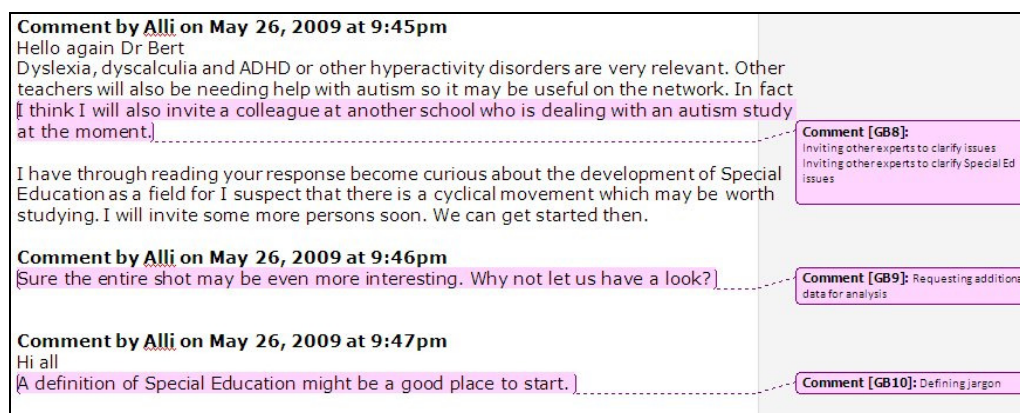


Figure 7.6 – Message unit 8, 9 and 10

In **Figure 7.6**, Alli seems to want to take the discussion forward when he draws attention to other topics in special needs. Strangely enough, coder 1 codes message unit 8 with a number of meanings, and also labels this message unit as a means of building network links. Coder 2 understands this message as an indication that Alli, having a shared understanding of epilepsy, is expressing 'interest in future discussions'. In making sense of the various codes for message unit 8, I see this as 'seek[ing] networking and collaborative knowledge-building and sharing' as well as 'seeking clarification'. In message unit 9, Alli responds to message unit 6 relating to a photo shared as part of the discussion. The unit is clearly a 'request for additional data analysis,' declares coder 3, in order to further 'subject clarity', adds coder 2. Alli seems to be 'providing a motivating comment' and using 'engaging language,' observes coder 1 in order to encourage Bert to post a copy of the original copy of the photo for further analysis. Alli, however, in message unit 10, suggests the need to start the focus on special education as an initial topic of discussion, but this time he addresses the entire group.

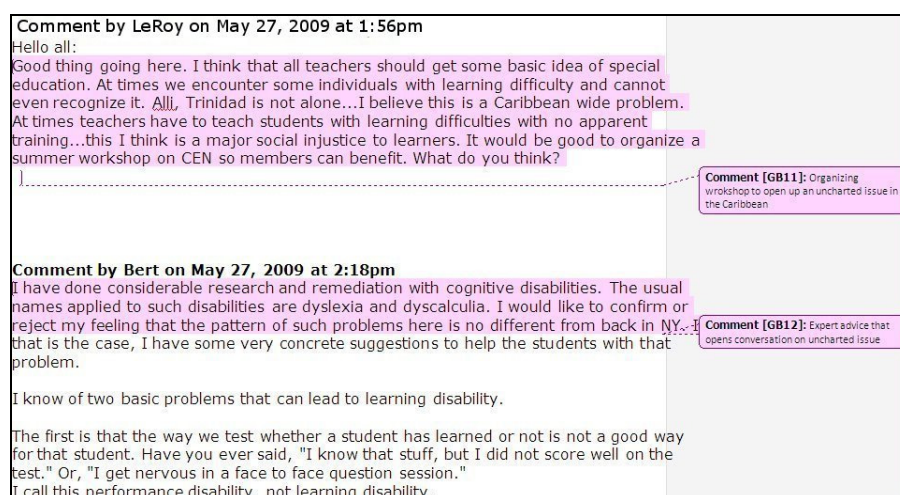


Figure 7.7 – Message units 11, 12.

In response to message unit 10 (see **Figure 7.6**), LeRoy put forward a request in his 'organising workshop to open up an uncharted issue in Caribbean' (coder 3, **Figure 7.7**). Coder 1 interprets this as a form of 'commendation', while coder 2 interprets it as 'support for subject'. Coder 4 also sees this as 'acknowledging the need for the subject', but also as a 'deeper reflection to prove larger scope of the topic', as well as a 'suggestion to co-learn and benefit from others experiences.' In

reaction to LeRoy's request Bert, in message unit 12 (**Figure 7.7**), goes on to clarify his interpretation of learning disability. While coder 3 regards his clarification as 'expert advice that opens conversation on uncharted issue in Caribbean', coder 2 views it as a way of 'restating the subject'. Coders 1, 3 and 4 agree that message 12 is a detailed response that gives critical expert advice and opinion based on Bert's 'personal research [and experience] in the field'.

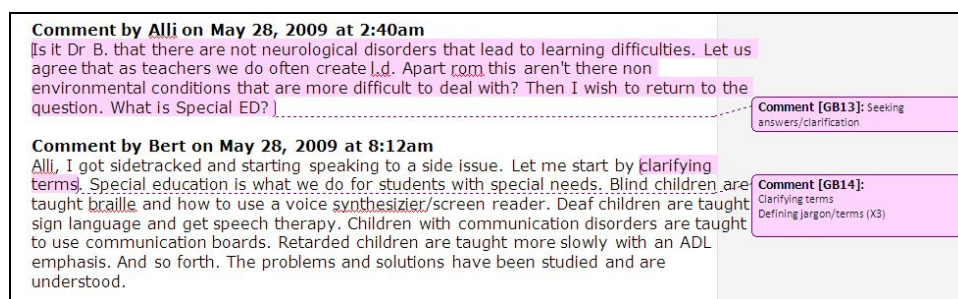


Figure 7.8 – Message units 13, 14

Message units 13 and 14 (**Figure 7.8**) are in fact a response pair to the issue of special education, with Alli's imparting focus to the discussion by 'reviewing the subject' (coder2), and 'seeking answers/clarification' (coder 3). Alli seems to place a critical value on having a shared understanding of special education; Bert recognises his persistence, excuses himself for not responding to his previous knowledge-sharing request (see message unit 10, **Figure 7.6**, and then gives a definition (see **Figure 7.8**), but in addition to that, he includes some granularity and justification for his sustained focus on disability:

Now we come to children who are not retarded, have normal sensory abilities, and the usual educational opportunities, but still have problems learning. These are the children who are called learning disabled. Usually the issue is in one particular area such as reading or math and sometimes the children have problems that are hard to pinpoint and are given such labels as auditory processing difficulties.

I am a strong proponent of neuropsychological differences that are the basis of these "learning disabilities". I also consider learning disabilities to be an extreme of learning styles. We all have preferred ways of learning. There are those who learn by rewriting notes or underlining or those who learn best by explaining it to someone else or who learn best by re-reading the material. When this preference becomes extreme and the student cannot learn in a particular way, the child is called learning disabled. That is, if the way we are teaching is not the way the student learns.

(Taken from message unit 14, Diversity of Learning Group Transcription, Appendix 3)

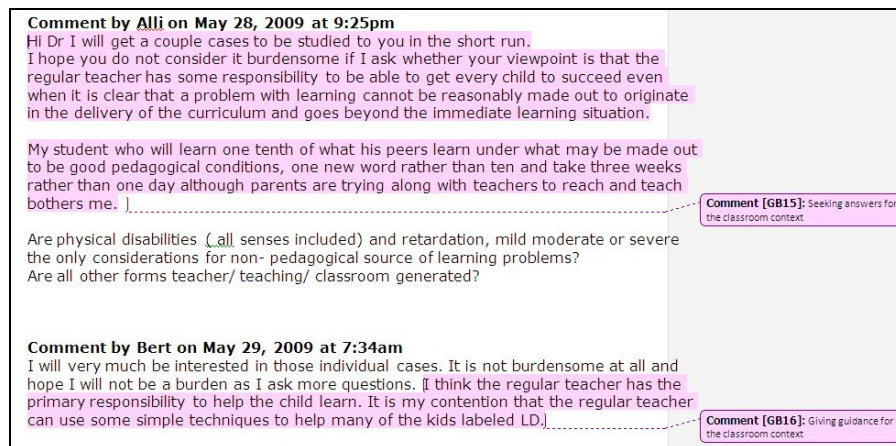


Figure 7.9 - Message units 15, 16

Although Alli does not respond directly to Bert's perception of disability, in message unit 15 he shows added interest in furthering the dialogue by proposing a chance to share some cases from his school (see **Figure 7.9**). Admittedly, Alli's choice of method- practical inquiry - is a justifiable way of testing Bert's hypothesis on disability. Coder 3 interprets message unit 15 as 'seeking answers for classroom context', while coder 2 considers 'subject related activity' an appropriate code. While there are some similarities between the meanings of coders 2 and 3, the message unit does show that Alli is also able to 'critically discuss the roles and responsibilities of teachers' (coder 4) with regard to special education and disability. Alli in a sense challenges Bert's hypothesis by asking if all other forms of disability are generated by the teacher or classroom environment. While agreeing to work with Alli in analysing the local school cases, Bert points out in message 16, (see **Figure 7.9**) that there are some simple techniques that teachers can use to help students who have been labelled with learning disability. To coder 3, however, message 16 is 'guidance to classroom context', while for coder 2 it merits 'further clarification of subject with discussion'. Coder 4, however, reads three meanings in the message unit: 'shows concern for the questions raised', 'encourages dialogue and shows interests', and 'provides clarifications about personal notion'.

THREAD B
How the Brain Works
*** Posted by Gene on May 25, 2009 in The Diversity of Learning**

Hi
Recent discussions/readings on diversity of learning makes it clear that teachers have to so much more when planning/delivering lessons. One other consideration is definitely knowledge of how the brain works. I am recommending a website with an interesting ppt presentation. Please look at it for further discussion.

www.colleton.k12.sc.us/Ttc/CharlesGale/HowBrainLearns.ppt

Comment by Alli on May 26, 2009 at 9:33pm
Thanks Gene
A bit technical, necessary, good for a workshop situation with an expert guiding assimilation of the material and implications

Replies to Discussion Reply by Bert on May 27, 2009 at 7:30am
When I was teaching, most of my research program revolved around the brain, especially the differences between the two hemispheres. One of my major concerns, however, is that these differences have been overstated which has led to fads and anthropomorphism. There was a book entitled "Drawing with the Right Side of the Brain." It actually had some good strategies for improving your drawing but it should have been called something like, "Using Right Hemisphere Strategies"

Comment [GB18]: Clear group purposes
Sharing resources

Comment [GB19]: Implications for future professional development

Comment [GB20]:
Share research objectives
Share resources
Critiquing resources; offer alternatives
Defining jargon
Teaching the group

Figure 7.10 - Message units 18, 19, 20

Figures 7.10 and **7.11**, together display responses on a separate discussion thread within the group. The thread, opened by Gene on May 25 2009, consists of four message units. Gene emphasises the need to address diversity of learning, and shares a link where the group can view a PowerPoint presentation on how the brain works. In message unit 19 (**Figure 7.10**), Alli places a critical value on the link- the resource shared. Alli identified this link as something technical that would better be served through a workshop with expert guidance. As far as coder 3 is concerned, the message has 'implications for future professional development', and coders 1 and 4 agree with this position: Bert's suggestion is indeed a form of confirming the request for further knowledge-sharing on the item. Bert follows through with a response in message unit 20; drawing attention to specific slides, he interprets the PowerPoint presentation with reference to personal and professional examples, and concludes with this caveat:

This is a rich topic and I can expound on it for pages. Rather than overwhelming you, let me just end with this closing thought. I said previously that the two hemispheres use different strategies to accomplish the same tasks, but there is one exception to this. One of the earliest findings on brain laterality was that speech production is controlled by the left hemisphere and may be the only cognitive skill that is limited to one hemisphere. This has a profound effect on education and I hope to develop that as we continue to discuss how the brain is organized.

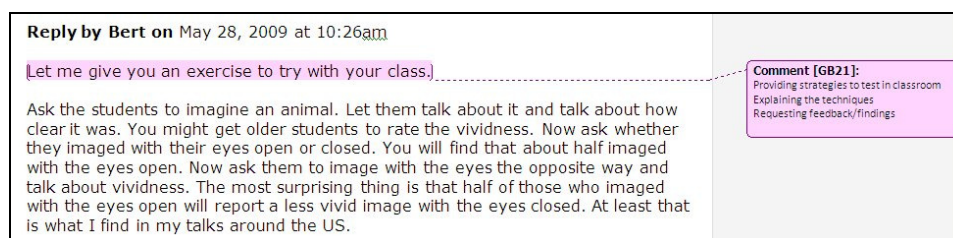


Figure 7.11 – Message unit 21

In message unit 21 (**Figure 7.11**) Bert builds on his previous interpretation (from message unit 20) and provides members a practical exercise. Coder 2 considers this an elaboration of contextualised activity based on Bert’s knowledge and experience and previous discussions. Coder 3 identifies the message unit as a ‘strategy to test in the classroom’, whereas inter-subjectively the unit is categorised as a ‘detailed response with personal and real life references’.

Scrutiny of the dialogue afforded a glimpse into the world of the members of the Diversity of Learning group. Naturally, my goal was not to get into the minds of the individuals, but through their dialogic exchanges I was able to observe and confirm that collaborative knowledge-building took place. This observable collaborative knowledge-building occurred as members drew on one another’s experience and dialogic postings. This interaction and dialogue was the knowledge artefact that mediated the collaborative knowledge-building that formed part of this group. There were hints as well as clear and convincing evidence of group cognition both here, and in the coders’ co-construction of knowledge. Members shared knowledge with one another through dialogue. The linking the processes and presences to this dialogic activity shall be addressed in the next section, where I classify each coded message unit according to the themes or categories (presences) that emerged from the previous cycle (Chapter 6) and as well as the processes from the coding activity. These will be considered against a review of the themes from the previous cycle, and also with reference to the literature.

Linking the codes to themes

In this section, I build on the conceptualisation of the presences from the previous cycle and suggest processes that were part of each presence. First I revisit the

themes from the previous cycle (Chapter 6) and provide operational definitions, indicators and processes that helped in conceptualising the emerging framework. In order to test the utility of this conceptualisation, I recoded the same unit of analysis, an action which provided a way to ground the processes to the presences.

The themes

In Chapter 6, I introduced six themes that arose from the participatory design and meaning-making process. These were (1) Community (2) Social (3) Cognition (4) Reflection (5) Tools ('artefactization') (6) Moderating. Further reflection on and analysis of the themes revealed some overlap, and this convinced me of the need to review them. For example, reflection was often highlighted as a social-cognitive activity (Staudinger 2001; Hiebert 1992) and social interaction was identified as an embedded activity within communities (Brown et al. 1989). Thus, instead of having reflection as a separate theme, it was helpful to identify reflection as an activity embedded within the cognition function of learning within a group. Asking questions, making suggestions, reflecting on personal knowledge and hypothesising all form part of the cognitive makeup. Likewise, social interaction as an embedded process within communities serves as a way to legitimate the community function.

For this reason, I advocate the use of 'cognitive presence' as a metaphor to denote the embedded process of reflection, asking questions, making suggestions, and hypothesising; and 'Community presence' as a metaphor to signify the social and other processes that facilitate cohesion and interaction within the group. Thus I propose four themes: (1) Cognitive presence (2) Community presence (3) Moderating presence and (4) 'Artefactization' presence. I shall return to the notion of presence as it relates to the conceptualising of the emerging framework. **Table 7.5** shows a breakdown of my conceptualisation of the four themes. The operational definitions and category indicators are meant to assist readers in linking the processes and conditions with the codes and analysis.

Table 7.5 – Showing operational definitions and indicators of categories

Category	Operational definition	Indicators
<u>Cognitive presence</u> Key Processes: Reflection; meta-cognition;	The extent to which a group co-construct meaning through collaborative dialogue that demonstrates knowledge	<u>Cognition</u> Asking questions; making inferences; Formulating hypothesis; Making decisions; Defining terms; Requesting knowledge-sharing; Sharing

Valuing; Cognition	and skills, self-awareness, self-control, and self-regulation	<p>knowledge; Sharing opinions</p> <p><u>Reflection</u> Evaluations; Criticism; Appreciation; Making value statements; Making reference to knowledge; Experience; Expertise; Acknowledging understanding. Eg. I understand, I think, I wonder</p> <p>(adapted from Henri's 1992 Analytical model p129)</p>
<p><u>Community presence</u></p> <p>Key Processes: legitimate peripheral participation, social interaction</p>	This is the social function of the group and is evaluated by the extent to which a group fosters a sense of belongingness, and cohesion through open dialogue	<p><u>Affective</u> Use of Humour; Expressing emotions, Expressing value; Self-disclosure; Use of emoticons</p> <p><u>Open communication</u> Continuing a thread; Referring to a previous comment; Asking questions; Complementing; Expressing appreciation; Expressing agreement; Expressing disagreement; Personal advice; Agreeing to discuss further</p> <p><u>Group cohesion & belongingness</u> Addressing or referring to member by name; Using encouraging language and tone; Inclusive pronouns; Showing interest in group cohesion; interest in group activity; Greetings; Salutations; 'Small talk'. (Adapted from Garrison et al. 2000)</p>
<p><u>Moderating presence</u></p> <p>Key processes: Designing and supporting collaborative knowledge-building setting; Roles</p>	The extent to which whole group presences (Social, Cognitive and 'Artefactization') and processes are designed and facilitated through continuous negotiation and designing of roles and responsibilities	<p><u>Design</u> Sharing and assigning roles and ascribing duties; Defining and clarifying parameters of dialogue; initiating themes for discussions</p> <p><u>Facilitating</u> Encouraging collaboration and participation; Guiding dialogue; facilitating meaning-making; Seeking to negotiate consensus; Reinforcing or acknowledging contributions.</p>
<p>'Artefactization' presence</p> <p>Key processes: Selecting appropriate context; Tools</p>	The extent to which a group harnesses technology, skills and knowledge to actively satisfy shared object	<p><u>Technological setting.</u> Configuring tool for group use; Introducing new tool or link; Embedding external object in group space.</p> <p><u>Tool appropriation</u> Recommending tool; Displaying tool use; Sharing links; Sharing resources; Encouraging use of tool; Showing evidence of tool use. For</p>

		example, Let me share; I know how to.
--	--	---------------------------------------

Using **Table 7.5** as a mediating artefact, I revisited each message unit from the inter-subjective codes (**Table 7.4**) and the unit of analysis, and coded them according to the processes and presences represented in **Table 7.5**. I imported the unit of analysis into Atlas.ti and recoded each message unit for meaning. A complete account of the recoding outcome is shown in Appendix 5. This was a way to test the value of the inter-subjective codes against the categories that originated from the meaning-making process, as well as to verify the link between the codes and the categories. The result of this linking activity is represented in **Tables 7.6** and **7.7**. The activity also functioned as a method of evaluating the intensity of a particular presence within the collaborative knowledge-building group. Examples showing how I recoded the message units are displayed in **Figures 7.12 – 7.14**.

001	<u>The Diversity of Learning – A</u>	
002	The purpose of this group is to accommodate the special needs of individuals. It applies equally to the blind and deaf, the autism and learning disability, and learning styles. Members: 8 Latest Activity: Mar 19	Clear Group Purpose - MOP
003		
004	<u>THREAD A</u>	
005	Comment by Alli on May 22, 2009 at 7:45pm	
006	Hello all	Greeting - COP
007	The CEN has crossed another frontier with this group. Special Education expertise is rare in Trinidad and perhaps in the region as a whole. I hope we all benefit.	Evaluation - CGP
008		
009	I am particularly interested at this moment in any information on epilepsy and EBD that can help teachers at the secondary level.	Requesting Knowledge sharing - CGP
010		
011	Hope to get help or suggestions soon.	Requesting Knowledge sharing - CGP
012		

Figure 7.12 – recoded message unit 1

In **Figure 7.12**, the message unit 1, which was represented originally in the inter-subjective codes as 'praise group', 'poses questions for knowledge-building and sharing' is recorded into processes and the accompanying presence of the process. Three presences are represented in this message unit: moderating presence (MOP), cognitive presence (CGP), and community presence (COP). The presences are coded on the basis of the underlying processes that they suggest. For example, 'clear group purpose' suggests a process within the moderating presence category, and is coded as such.

073	Comment by Alli on May 28, 2009 at 2:40am	
074	Is it Dr B. that there are not neurological disorders that lead to learning difficulties. Let us agi	Asking question - CGP
	that as teachers we do often create I.d. Apart from this aren't there non environmental condit	Refer by name - COP
	that are more difficult to deal with? Then I wish to return to the question. What is Special ED:	Asking question - CGP
075		Asking question - CGP

Figure 7.13 – recoded message unit 13

Figure 7.13 shows the recoding for message unit 13. This unit was coded as 'learning and questioning through critical dialogue' in the inter-subjective code. But here it is recoded as 'asking question' (cognitive presence) and 'refer by name' (community presence).

117	Comment by Alli on May 26, 2009 at 9:33pm	
118	Thanks Gene	
119	A bit technical ,necessary, good for a workshop situation with an expert guiding assimilation c	Refer by name - COP
	material and implications	Design suggestion - MOP
		Evaluation - CGP

Figure 7.14 – recoded message unit 19

Message unit 19 in **Figure 7.14** is recoded as three presences and processes: 'refer by name' (community presence), 'design suggestion' (moderating presence) and 'evaluation' (cognitive presence). **Table 7.6** displays a listing of all the proceses and presences that were identified in this recoding activity. For example, in message unit 1, references to social, reflective and moderating processes and their corresponding presences can be identified.

Table 7.6 – Mapping of each message unit to processes and presences.

Message Unit	Mapping (processes and presences)
1	Clear Group Purpose (MOP); Greeting (COP); Evaluation (CGP); Requesting Knowledge-Sharing (CGP)
2	Refer by name (COP); Agree to discuss further (COP); Sharing knowledge (CGP); Sharing personal experience (CGP); Asking question (CGP); Evaluation (CGP)
3	Requesting knowledge-sharing (CGP); Response to previous request (CGP); Sharing personal experience (CGP)
4	Sharing resource (ARP)
5	Complementing (COP); Making inferences (CGP); Evaluation (CGP)
6	Making reference to experience (CGP); Offering to share resource (ARP)
7	Agreeing to discuss further (COP); Response to previous request (CGP); Criticism (CGP); Refer by name (COP) sharing knowledge (CGP)
8	Refer by name (COP); Request knowledge sharing (CGP); Response to previous

	request (CGP); Agree to discuss further (COP); Shows interest in group (COP)
9	Asking question (COP); Requesting knowledge-sharing (CGP)
10	Requesting knowledge-sharing (CGP); Initiating themes for discussion (MOP); Greeting group (COP)
11	Greeting (COP); Shares opinion (CGP); Complimenting (COP); Refer by name (COP); Design suggestion (MOP); Asking question (CGP)
12	Sharing knowledge (CGP); Making inferences (CGP); Criticism (CGP); Evaluation (CGP)
13	Asking question (CGP); Refer by name (COP)
14	Making value statement (CGP); Refer by name (COP); Response to previous request (CGP); Sharing knowledge (CGP); Expressing value for context (COP); Making reference to experience (CGP); Requesting knowledge-sharing (CGP)
15	Agree to discuss further (COP); Evaluation (CGP); Requesting knowledge-sharing (CGP); Sharing personal experience (CGP); Asking question (CGP)
16	Asking question (COP); Expressing value for context (COP); Agree to discuss further (COP); Shows interest in group (COP); Shares opinion (CGP); Sharing knowledge (CGP)
17	Sharing resource (ARP)
18	Asking question (CGP); Initiating themes for discussion (MOP); Requesting knowledge sharing (CGP); Sharing resource (ARP)
19	Refer by name (COP); Design suggestion (MOP); Evaluation (CGP)
20	Sharing knowledge (CGP); Making inferences (CGP); Explaining context (CGP); Concern for member (COP); Evaluation (CGP)
21	Initiation activity (MOP); Sharing resource (ARP)

Table 7.7 summarises of the message unit link to presences. Each 'X' represents a separate instance of a presence in each message unit (see **Table 7.4**).

Table 7.7 – Showing the themes represented in each message unit.

Message Unit	Community	Moderating	Artefactization	Cognitive
1	X	X		X
2	X			X
3				X
4			X	
5	X			X
6			X	X
7	X			X
8	X			X
9	X			X

10	X	X		X
11	X	X		X
12				X
13	X			X
14	X			X
15	X			X
16	X			X
17			X	
18		X	X	X
19	X	X		X
20				X
21		X	X	

Tables 7.6 and **7.7** both reveal the cognitive presence as the most frequently coded category, and the artefactization presence as the least frequently coded category in the unit of analysis **Table 7.7** also shows that the moderating process took place mainly at the beginning of the discussion thread, as in the case of message units 1 and 18. From this I was able to identify references to processes of social interaction, describing, tool-sharing and appropriation, valuing, reflecting, defining, designing activity, and the use of friendly language and tone. Using this information I was able to make sense of the processes and presences that enabled the collaborative knowledge-building in the Diversity of Learning group.

The conscious attempt at implementing group cognition, activity theory, community of inquiry, the work of Henri (1992) (see **Table 7.5**) and the inter-subjective coding activity proved helpful in understanding the mediating presence. In the next section I provide additional support for the themes as a way of theorising the CEN e-mediating framework.

At this stage I wanted to find out if the recoded processes contrasted greatly with the previous group coding activity presented in **Table 7.4**, and this prompted me to perform a different level of coding. This was even more important because, as I valued the group coding activity, I wanted to verify if my recoding had deviated from the original coding activity. Thus this level of coding was to identify if there were similarities between the inter-subjective (group) coding with my recoding activity. The result of this comparison is displayed in Appendix 6, but I display how I conducted this comparison in **Figure 7.15**.

Unit	Group coding (from Table 7.4) (processes)	Recoding (from Table 7.6) (processes)	Map to themes (presences)
1	Praise group; poses questions for knowledge-building and sharing	Clear Group Purpose; Greeting, Evaluation; Requesting Knowledge Sharing;	MOP, COP, CGP, CGP
2	Seeking clarification; provide expert knowledge; inviting others in dialogue	Refer by name; agree to discuss further; Sharing knowledge; Share personal experience; asking question; Evaluation	COP, CGP, COP,
3	Explaining previous comment; personal examples from experience; sharing resource	Requesting knowledge-sharing; response to previous request; share personal experience	CGP
4	Sharing resource; inviting responses	Sharing resource	ARP
5	Analysing resource; critical response to resource and post	Complementing; making inferences; Evaluation	COP, CGP
6	Expert advice response; analysing resource provided	Making reference to experience; offering to share resource	CGP, ARP

Figure 7.15 – Comparison of coding (comparing Tables 7.4 and 7.6).

This additional level of coding was helpful since it showed the similarities between the group coding and the recoding as a method of linking the processes from each coding activity. I highlighted the processes from the group coding to the recoding with the same colour to show their similarity. In **Figure 7.15**, the comparison of message units 1-6 is provided. For example, message unit 1, 'poses questions for knowledge-building and sharing', from the group coding activity corresponds to 'requesting knowledge-building in the recoding activity. Likewise in message unit 2, two processes correspond: 'seeking clarification' (group coding) corresponds to 'asking question' (recoding), 'provide expert knowledge' corresponds to 'sharing knowledge [and] share personal experience'. Thus I was able to find similarities in the inter-subjective (group) coding to my recoding activity. Out of the 21 message units, I was able to establish similarities between 19 message units. Message units 11 and 19 (see **Appendix 6**) showed no similarities in the codes. For example, in message unit 11 there appeared to be no similarities in codes: 'Reflective dialogue'; praise group efforts) (see **Table 7.4**) bore no correspondence to the recoded codes: greeting; shares opinion; complementing; refer by name; design suggestion; asking question (see **Table 7.6**). It is unclear why there are differences in message

units 11 and 19. However, the activity proved that my recoding did not deviate far from the group coding activity.

7.3 Reflection: Discussion & Literature Review

In the previous cycle I introduced group cognition (Stahl 2005; Stahl 2006), community of inquiry (Garrison et al. 2000), activity theory (Leont'ev 1978; Engeström 1987) and Henri's (1992) analytical framework as mediating artefacts to theorise a framework for mediating the collaborative knowledge-building within the CEN. In this section I build on that conceptualisation and reflect further on the themes, the findings in this cycle and the literature. The overarching assumption presented here is that there is need for mediation in the collaborative knowledge-building process in CEN groups. I discuss this in more detail in the next section.

The need for mediation

Reflection on the analysis in the research setting and interpretation of the literature reveal that there are artefacts (processes and presences) that mediate effective knowledge-building in social networking settings. Mediation is a complex process to decipher. As a key component, mediation is not just using tools to routinely deliver information to learners; instead mediation, as I visualise it, is the entire, visible object-oriented activity that relies on network technology and tools, and the embedded values that these tools contain. Additionally, this mediation is not isolated from the connected human consciousness (Nardi 1996), but rather leads to the need for establishing and maintaining links with others in the social networking setting. Moreover, although technologies designed to support collaborative learning are seen as mediatory artefacts (Koschmann 2002; Conole et al. 2010), we need to explore how these artefacts mediate collaborative knowledge-building in social networking contexts. The conceptualisation in this research provides a picture of the process of mediation within collaborative knowledge-building settings. Naturally, online social networks and technology have embedded values that express this

extensive human activity of meaning-making. I therefore put forward the view that collaborative knowledge-building in social networks is mediated not only by the effective use of social networking technology and software, but equally also by the social processes, values and rules it promotes; the cultural boundaries of belonging; and the cognitive processes that these social networking tools imply. I shall therefore present a framework that expresses this thinking, and promote it as a mediating artefact of collaborative learning within the CEN. This becomes the focus of discussion in the next section.

The CEN e-mediating framework

In this section I take forward the discussion from the previous cycle (Chapter 6) by presenting a conceptualisation of processes (what is done) and presences (conditions, environment that support processes) that forms part of what I identify as the e-mediating framework for facilitating collaborative learning in the CEN. I therefore advance an argument for the e-mediating framework by drawing additional attention to the themes that emerged from the previous cycle, but first I shall explain how the concept of presence is used within this framework.

Presence

The notion of presence in the online setting addresses various ontological assumptions of reality (Slater 2011; Witmer & Singer 2011; Zahorik & Jenison 2011). However, from an educational perspective, presence can be measured by taking note of aspects of observable manifestations. Taking attendance, for example, is a way of evidencing physical presence in classroom settings. Yet, an individual being physically present in a classroom may be socially or cognitively absent. Thus, presence is manifested in other spheres of human learning engagement. In Chapter 2, I argued for social, cognitive and technological dimensions of learning in social networks. This conceptualisation asserts learning as a complex multifaceted process and provides support for considering presence as a complex composition within the social networking setting. But how is presence identified in online social networking settings? I suggest that one way to identify presence is to take note of the interaction and the dialogue that form part of the environment. Thus, taking note of interaction not only establishes physical presence but also establishes the cognitive and other presences that make up part of the

collaborative knowledge-building environment. For this reason, we need to address how the community, cognitive, moderating and 'artefactization' presence are identified. Taking note of these presences becomes an important way of making sense of a learning design approach to mediating collaborative knowledge-building in the CEN. It should be noted, however, that the focus on presence does not detract from the inherent processes involved in making these presences an outcome. Consequently, I see the notion of online presence as being embodied with a number of complex inherent processes that mediate the collaborative knowledge-building activity. Not only this, but within this emerging framework I see presence as the desired outcome, while I see the object (working space) as the purposeful processes. I support these claims in the following section.

Substantiating the framework

The alignment of group cognition (Stahl 2005; Stahl 2006), community of inquiry (Garrison et al. 2000) and activity theory (Leont'ev 1978; Engeström 1987) provided a useful way of theorising the CEN e-mediating framework. The idea of mediation as implied by the framework invokes the notion of scaffolding (Wood et al. 1976) that accordingly is necessary within collaborative knowledge-building groups. The four components (presences) of the CEN e-mediating framework link with the socio-cultural and activity theory perspective. For example, each of the four components of the CEN e-mediating framework is reflected in activity theory, showing the strong link of activity theory to its theorisation. In the CEN e-mediating framework, the 'moderating presence' implies the need for the division of labour and roles so as to help others achieve what they would not normally achieve by themselves; 'artefactization presence' implies the need to appropriate technological tools to meet the needs of collaborative knowledge-building within the group; 'cognitive presence' implies the internalisation process in which individuals make sense of interaction and knowledge; and 'community presence' implies the social embeddedness of the collaborative knowledge-building process. The collaborative knowledge-building process in this setting is not restricted to human scaffolding, but is also mediated through non-human artefacts. The inclusion of the object as the collaborative knowledge-building working space and the outcome as the presences (conditions) proffers a conceptualisation that deviates from the activity theory triangle model (see **Figure 7.16**), a point that is worth further exploration.

However, this requires active social interaction within the group situated setting in order to access the artefacts contained within. Cole & Engeström (1993) represent these through a dynamic relationship between and reliance on tools, community and the division of labour. I conceptualise this relationship as four themes or presences: Community presence, cognitive presence, moderating presence and 'artefactization' presence, which will be presented subsequently, beginning in the next section, with the community presence.

1. Community presence.

Community presence builds on the notion of community as presented in Chapter 2, and stresses social interaction and participation in cultural contextual collaborative knowledge-building activities. I contend that communities have an embedded culture of activities that develops and maintains knowledge within groups. Social interaction, therefore becomes a natural part of the process of accessing these cultural tools. That being so, the focus on social interaction in a community therefore is an attention to human transformation rather than to transmission of knowledge. It is through this social interaction mediated by the tools, rules and roles within communities that this transformation occurs. New tools are created within the community and are used by others in the mediation process. Vygotsky maintains that individuals use cultural tools, but are themselves transformed by the same (Vygotsky 1978). In the CoI model (Garrison et al. 2000), this social interaction is recognised as the social presence, which is promoted as the capacity of learners to display social and emotional characteristics in their computer mediated communication (Garrison et al. 2000). As established in Chapter 6, this social presence takes the form of affective, interactive and cohesive responses. To this end, these responses were expressed as indicators in **Table 7.5**, which served as a tool for the coding process in this cycle. As social interaction is an embedded function in the community, I conceptualised this social function as part of the community presence. Thus social interaction is a basic aspect of community presences. Another aspect of the community presence is cohesion and belongingness. These are seen as important aspects of keeping the community together through a sense of group commitment (Rourke et al. 1999). The use of communication that expresses feelings and moods is part of this function. Belongingness however is linked to identity in groups. Wenger (2007) asserts that

identity is shaped by belonging to a community. According to this view, then, belongingness is an embedded aspect of the community, as indicated by the way in which members interact with one another in the community (see **Table 7.5** for indicators).

2. Cognitive presence.

In Chapter 6, I introduced cognitive presence as an approach that builds on the cognitive presence from the CoI (Garrison et al. 2000). Garrison et al. (2000) contend that the cognitive presence addresses the process of meaning-making by using prolonged computer mediated communication and is indicated by triggering event, exploration, integration and resolution. These indicators are applicable in the formal academic setting, but they are difficult to apply in the informal online social networking context. Within online social networking setting, cognitive presence is closely linked to group cognition (Stahl 2005; Stahl 2006), which I described in Chapter 5. In this setting, cognitive presence speaks to the co-construction of knowledge, negotiating group knowledge, perspective sharing, and knowledge negotiation and reflection. Aspects such as asking questions, making inferences, and formulating hypothesis are all examples of indicators of the cognitive presence. Additionally, reflection is identified as a process that is embedded within the cognitive presence; it may also take the form of valuing through evaluations, criticisms and appreciations. These indicators are also part of the approach recommended by Henri (1992).

3. Artefactization presence

Activity theory signifies the use of artefacts developed within a specific cultural setting as mediators of human activity. The appropriation of tools, therefore, constitutes a basic part of mediation, a point that is highlighted in the works of Harré (1984); Newman et al. (1989); and Rogoff (1995). For Harré (1984) appropriation is a process of internalising external artefacts and, as a process, precedes transformation. In a similar vein, Newman et al. (1989) denote appropriation as a process of internalisation, where cultural resources and tools are utilised through participating in situated activities. Rogoff (1995), building on Harré (1984) and Newman et al. (1989), argues for appropriation as a process of participative

transformation. Thus, appropriation is seen as a "process of participation, [where] the individual changes through involvement in the situation at hand, and this participation contributes both to the direction of the evolving event and to the individual's preparation for involvement in other similar events" (Rogoff 1995, p.153). These conceptualisations of appropriation are useful in explaining what I deem the 'artefactization' presence. However, I use the term metaphorically to describe the mediation through the utilisation of tools that is necessary within the informal online collaborative knowledge-building setting. The focus on tools allows me to look into the specialised skills that form part of the wider mediation process, as a way to help to mediate skill acquisition. The work of Leontev (1981) Kaptelinin (1996) and Kaptelinin & Nardi (2006) is valuable in the attempt to make sense of tools or task-related proficiencies requiring the use of functional organs to explain the combination of "natural human capabilities with artefacts to allow the individual to attain goals that [he or she] could not attain otherwise" (Kaptelinin & Nardi 2006, p.64). But Kaptelinin (1996) asserts that in order to benefit from this process, individuals need specialised knowledge and competencies. The idea of functional organs places agency on individuals as critical decision makers in the use of tools, as well when they have to be "updated, modified or even completely abandoned" (Kaptelinin & 2006, p.65). Applied in this research setting, this conceptualisation is very useful in understanding how individuals use tools when participating in on-line collaborative knowledge-building activities. As a number of tools, knowledge and competencies are required to participate at different levels within the collaborative knowledge-building activity, including artefactization as a presence seems a sensible course of action. It should be noted that although tools provide the mediation for human transformation, they are not in themselves separable from their use within an environment, since they do not have motive or intentionality. Tools are very much linked to the individuals who use them and, because of this, need, motivation and intention are bounded within that relationship (Miettinen 1999; Miettinen & Hasu 2002). Furthermore, Kaptelinin & (2006) reason that 'as designers, we construct environments to help people get something done, [and] we think of them as mediators of activity' (Kaptelinin & Nardi 2006, p.256). Building on this, I can justly use the metaphor, 'artefactization presence', in support of Kaptelinin & Nardi's call for making the link between tool context a part of the analytical process within activity systems. Tools, therefore, carry with them cultural meanings that go on to mediate collaborative knowledge-building in groups.

Conceivably, the appropriation of tools, both tangible and intangible, is an important process of mediation. With the proliferation and increase in use of social media tools in academic settings (Coverdale et al 2011), it becomes necessary to identify how individuals use online social media tools within the CEN context. This is particularly relevant in the case of online technology that is focused on social networking environments where individuals are required to use online tools to mediate their online collaborative knowledge-building activity. This collaborative knowledge-building works through social interaction. Individuals make visible their personal knowledge through dialogue, which becomes accessible for social interaction. More importantly, the use of social media tools implies an understanding of some of the values that they promote. Thus, artefactization as a metaphor is useful in understanding how individuals within collaborative knowledge-building groups use tools to interact, establish links, and manage connections within an online setting.

Despite all this focus on tools, though, we must look beyond tools and tool mediation to fully understand the mediating process within the CEN. Thus drawing on the wider activity that takes place, we need to focus attention on other mediators within an activity system. Engeström (1987), for example, has legitimately asserted that rules, the division of labour among individuals in the community, together with the tools, provide the mediation necessary for transformation. His focus on rules, tools and division of labour as mediating artefacts gives credence to the idea of the moderating presence, a more detailed presentation of which follows in the next section.

4. Moderating presence.

The importance of moderation to learning in online settings is increasingly recognised. In light of this, there have been a number of suggestions and approaches to guide the learning process in online settings (see Garrison et al. 2000; Laurillard 2000; Salmon 2004; MacDonald 2006). In addition, in a recent study, Vlachopoulos & Cowan (2010) report a correlation between moderation and levels of participation. The authors record that in cases where there was a low sense of moderation, students tended to focus less on the subject of interest. Moderating,

however, implies ascription of roles within online collaborative knowledge-building settings. It also implies that individuals need to be equipped with a number of competencies in order to undertake their roles. Within the community of inquiry (Garrison et al. 2000), this role process is represented as the teaching presence. However, there are some uncertainties concerning applying the community of inquiry framework to alternative contexts where there is a heightened sense of collaborative informal learning (Garrison et al. 2010). Therefore, its application to non-academic settings where learning tends to be more informal deserves attention. These settings free up the focus on the role of the teacher, as the process of teaching can be performed by any member of the group. There is growing support of this stance to suggest the importance of informal learning to professional development in communities (Garrick 1998; Lester 1999; Marsick & Watkins 2001; Durrant 2003; Melber & Cox-Petersen 2005). Bearing this in mind, it is important to factor in how the teaching presence is to be positioned within informal online learning communities. I do not depart whole-heartedly from the categorisation within the teaching presences. However, the 'direct instruction' sub-category is not particularly helpful in informal learning or non-academic institutional contexts. This encourages me to propose instead the moderating role that takes place in online group settings. Salmon (2004) recognises this role as e-moderation, consisting of a number of skills that "enable 'meaning-making' rather than content transmission" (Salmon 2004, p.52). Interestingly, the importance of moderating emerged in one of the collaborative meeting sessions of the CEN advisory group – an occurrence that brought more relevance to this review. In developing the idea of moderating in a social networking environment, I deliberate some of the main points of Salmon's argument. Salmon (2004) presents the e-moderator as a facilitator whose main role is engaging individuals in a learning process to create a sense of learning together. In her model, Salmon recognizes a set of five sequential steps to e-moderating: (1) access and motivation; (2) online socialization (3) information exchange (4) knowledge construction (5) development. In my judgment, moderating is an important aspect, but there are other key aspects that equally contribute to the mediation of collaborative knowledge-building in informal social networking settings. Thus Salmon's framework provides a useful prescriptive model for guiding electronic meetings and conferences but its use in the asynchronous informal social networking context remains a challenge. Added to this challenge is the definition of e-moderator, which is defined as an individual who "presides over

an electronic meeting or conference” (Salmon 2004, p.4). There are implications here in the governance structure in such settings. Typically, this is not the case in the informal social networking setting, where individuals initiate groups and may not necessarily be the one who guide or lead the discussion. There is, therefore, need for adopting alternative approaches to e-learning where Salmon’s model is inadequate (Lisewski & Joyce 2003; Moule 2007). Thus, I depart from Salmon’s sequential steps of moderating, while recognising its merits in training online moderators in academic settings. Salmon’s model draws attention to competencies and approaches used within a context that remains a challenge to be transferred to informal online learning contexts. This provides sufficient justification for repositioning and redefining such a role in the social networking context.

A review of the literature supports the need for moderation in collaborative knowledge-building in online settings. The need for moderation is also supported by the research findings in **section 6.2**, Chapter 6. Here the research inquiry revealed the need for guidance and moderating as a key component of the framework to mediate collaborative knowledge-building.

Against the review and reflection above, I propose **Figure 7.16** as a representation of a framework for mediating collaborative knowledge-building in the CEN. The framework comprises four presences as the desired outcome and condition. Each of the four presences is embedded with some processes. These processes make up the object or the collaborative knowledge-building working space which strives towards the desired outcome. I wanted to represent the framework in a simple way so as to make it easy for group initiators and members of to follow. The four presences are represented as the desired outcome (condition) which motivates the collaborative knowledge-building working space (object). This working space is driven by the embedded processes necessary to meet the desired outcome. The arrow shows this movement towards the desired outcome.

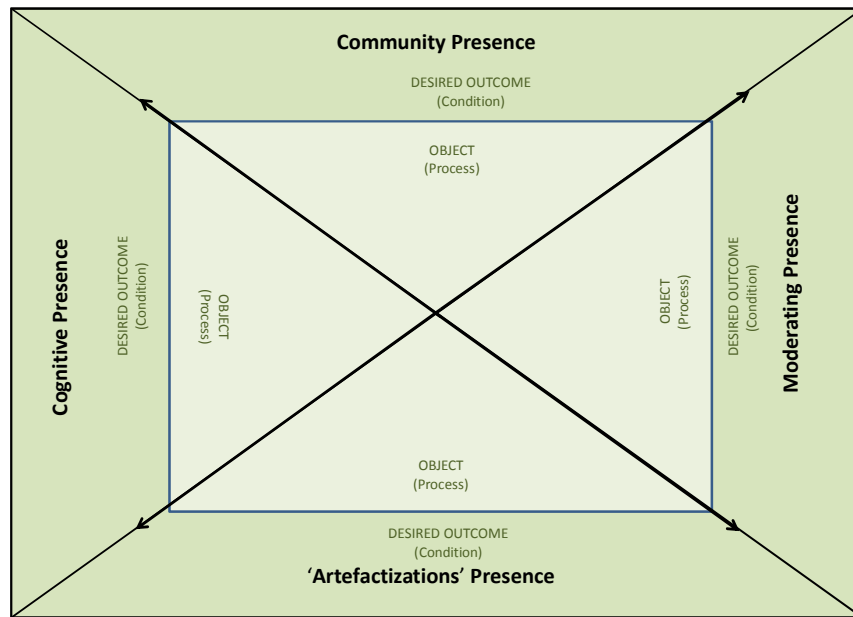


Figure 7.16 – A framework for mediating collaborative knowledge-building

Let me say at the outset that I do not envisage this conceptualisation as a universal framework for social networks; rather, I envision it as a tool that learning designers or group initiators can use to make sense of the context in designing collaborative learning environments within an informal online social networking setting. The framework suggests presences and processes as artefacts that mediate collaborative knowledge-building in the CEN context. I find the advice of Lisewski & Joyce (2003) and Conole (2008) helpful as an impetus for adopting a less prescriptive and more open approach to the mediation that is necessary if collaborative knowledge-building is to thrive. Consequently, I am in full agreement with the view that approaches to design for learning “need to establish a more self-reflexive, questioning, contestable and research-based ethos of practice” (Lisewski & Joyce 2003, p.63). To this end, **Figure 7.16**, can also be used as a tool that allows group initiators and members to reflect on and evaluate the processes and presences in their group.

7.4 Conclusion: The Way Forward

This chapter presented an account of the events of cycle 4 of the research project. The use of the inductive group coding and content analysis furnished a method with which to explore the processes and presences in the Diversity of Learning group. I was able to link the codes to these processes and presences that had originated from the research activity and literature search. I wanted to confirm my initial idea about the themes as presented in Chapter 6. I saw these processes and presences as mediators of collaborative knowledge-building in CEN groups. These themes which, to my mind, were in not in any way set in stone, furnished me with a helpful conceptualisation in advancing the shared object of collaborative knowledge-building in CEN groups. Specifically, the e-mediating framework as a tool within a collaborative knowledge building setting encompassed the kinds of cognitive processes, the supporting community conditions, the competencies of managing the collaborative knowledge-building processes, and the understanding and appropriate use the tools that formed part of the collaborative knowledge-building environment. These factors were developmental in nature: describing their evolution was tantamount to a historical account of the emergence of the learning context in the group setting.

There remains still more work to be done to advance the proposed framework into something that could be repurposed within the CEN. First, would be a clear set of methodological approaches designed for guiding group initiators in implementing the framework in their group. An interactive scale or check list would be useful for indicating which presences and processes could be identified within the group, which in turn could provide the basis for the transformation of the collaborative knowledge-building activity in the group. The results of this could be a visible, embedded function of the social networking environment. Second, would be the development of a visual representation of the tool that would capture the indicators and processes involved. An interesting third consideration would be the dissemination and promotion of the proposed framework in the network. Thus the research question to be addressed in the next cycle is, How do I go about repurposing the e-mediating framework within CEN groups? In the final chapter of the thesis, I provide a scenario that serves as a way of showcasing how the framework can be implemented in a CEN group.

8. Chapter 8

Making sense of the learning design exploration within the CEN

Introduction

This chapter, the climax of the action research, weaves the final thread into the thesis as a way to showcase the outcomes and their contribution to research, and reflect on the exploration. Therefore, in this chapter I reflect on the research outcomes and themes from the literature, and focus on their added value. This allows me to highlight important outcomes from each cycle. I begin by outlining the development of the research questions in each cycle along the research and design planes. These research questions address the wider learning design research question. Following this, I present an overview of the research process which began in Chapter 4 (cycle 1), and ended in Chapter 7 (cycle 4). Then I shall address the research outcomes of the research project and provide evidence of their value. In valuing their contribution to both the CEN and the discipline, I plan not only to offer a reflective account from my perspective of learning designer and researcher, but also to invoke the voices of the co-designers (coders). Naturally, the research was not without challenges and concerns and I intend to address these concerns and submit recommendations for the way forward. As a way of making sense of the design exploration, I provide parting reflections that serve as a reappraisal of the wider research agenda through a process of critical engagement with the co-designers (coders). I also provide a scenario as a way of predicting how the framework can be repurposed in the network. But before all of this, let me revisit the research questions in each cycle, and the relation of each cycle to the larger research question.

8.1 Research Questions

The research project was guided by the general research question, What is the nature of a learning design approach for exploring a framework for mediating collaborative knowledge-building in the CEN? This general research question was addressed by the four action research cycles through eight smaller research

questions (sub-research questions). Each cycle explored specific research questions on two planes – the research plane and the design plane, thus addressing the wider learning design research question. The sub questions are represented below, supported by the illustration in **Figure 8.1**.

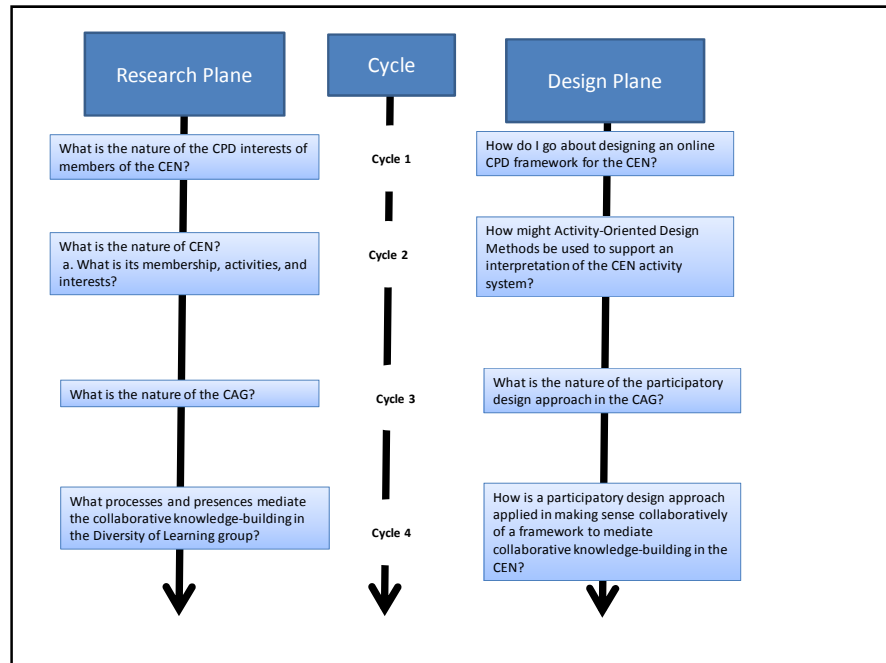


Figure 8.1 - Outline of sub research questions

8.2 The Research Journey

From a designer and researcher perspective, I developed an understanding of collaborative Knowledge-building in CEN groups through action research in its natural setting. The discoveries in this exploration marked a turning point in my development as designer and researcher, attested to in my account in various stages of this thesis. This reflection on the research journey is foreshadowed by my initial interest in instructional design, my training for the Master's Degree having influenced my focus on developing tools within an instructional frame for guiding learning. This interest in instructional design was to be challenged by my discoveries in the research exploration, when I discovered that the focus was less on

instruction and more on collaboration and knowledge-building. The exploration matured through a number of iterative cycles of planning, acting and reflecting, thus imparting a historical perspective to the development of the framework. At each cycle in the research context, a different research question formed the basis for further exploration. An overview of the journey in each cycle is provided in this section. The first 3 chapters of the thesis defined the context for the research exploration which began to unfold in Chapter 4, represented as cycle 1.

Cycle 1

In the first cycle (Chapter 4) my focus was on designing a CEN-wide approach with an eye to the continuing professional development (CPD) interest of members of the CEN. This required me to solicit feedback from members in order to gain an insight into their CPD interests. However, the intended focus on the CEN-wide framework was overshadowed by the asynchronous communicative activity that was taking place in the groups. The focus on asynchronous communication in the groups meant that my inquiry into the CEN-wide CPD framework was ill-informed and needed rethinking. I needed to come to a deeper understanding of the nature of the CEN to confirm the shared object in order to support and sustain it throughout the CEN. The initial exploration in this cycle, however, generated sufficient data to support an activity system interpretation of the design and CEN activity systems of this cycle. As a way of representing the dynamic relationship and development in the activity systems, I presented a graphical interpretation of Rogoff (1995) multiple plane analysis. Rogoff's (1995) contends that analysis can be shown on the personal, interpersonal and the community planes. On the strength of this, I felt that these levels offered a useful way to showcase the development of the research and design, as well as of the group (community plane). This afforded a useful means of understanding the complexity of activity theory as an analytical frame, and visualising the development and interaction between the activity systems. **Figure 8.2**, for example, shows the 'Learning Design Activity System-B' as the second instance of the activity system analysis in which the desired outcome of the online CPD framework was not achieved. Instead, what resulted was a set of responses to an online CPD online questionnaire (actual outcome).

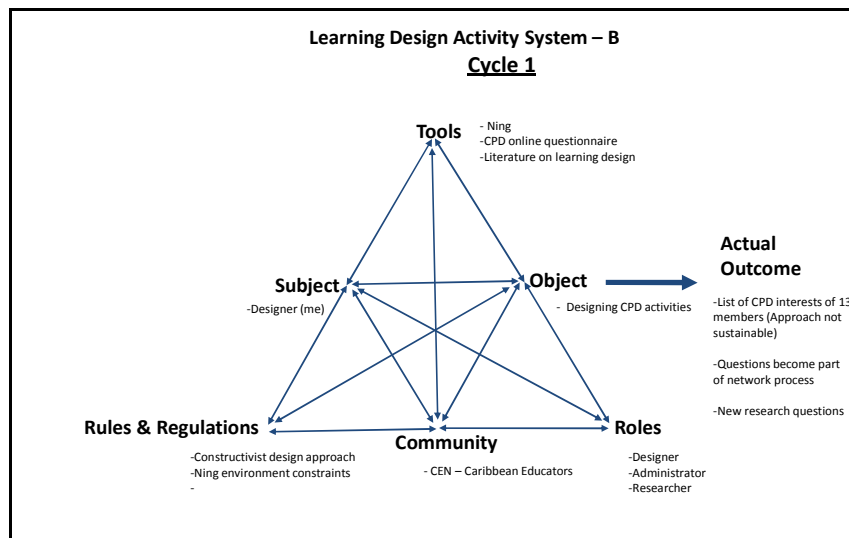


Figure 8.2 – Design Activity system – B
(Originally Figure 4.5)

In this cycle I also presented the activity systems analysis of the CEN the way I saw it as researcher at the time of this exploration. This is illustrated in **Figure 8.3** below.

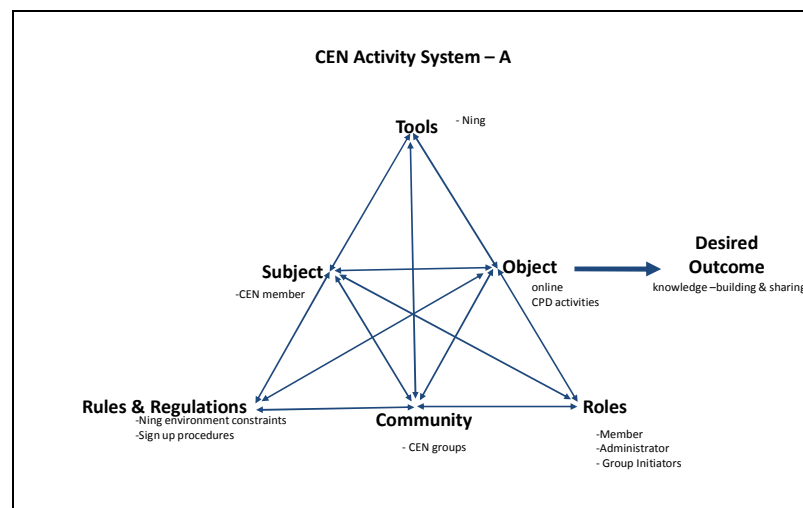


Figure 8.3 – Initial CEN (community plane) activity system interpretation
(Originally Figure 4.6)

The interpretation of the initial CEN activity system in **Figure 8.3** shows the perceived **object** of performing 'online CPD activities' linked to the anticipated

'collaborative knowledge-sharing' in the CEN (**desired outcome**). However, as indicated by the investigation in cycle 2, this was not the shared object in the CEN, a situation prompting the exploration in cycle 2 (Chapter 5). While activity theory did not inform the methodological or theoretical approach in this cycle, its use, from my perspective of researcher, provided a useful insight into the systemic relationships between components in the activity systems and their interdependencies. Likewise, activity theory provided a bounded way to visualise these systemic relationships.

Cycle 2

Activity theory was helpful in visualising the activity system in the previous cycle (Chapter 4), but I needed a methodologically sound approach to implement activity theory in the research context. Therefore, the purpose of this cycle was to use the Activity-Oriented Design Methods (AODM) as an approach with which to apply activity theory to explore the nature of the CEN in an attempt to gain a deeper understanding of it. The clear, easy-to-follow steps outlined by Mwanza (2002) served as an effective mediating artefact in implementing the framework in the research setting.

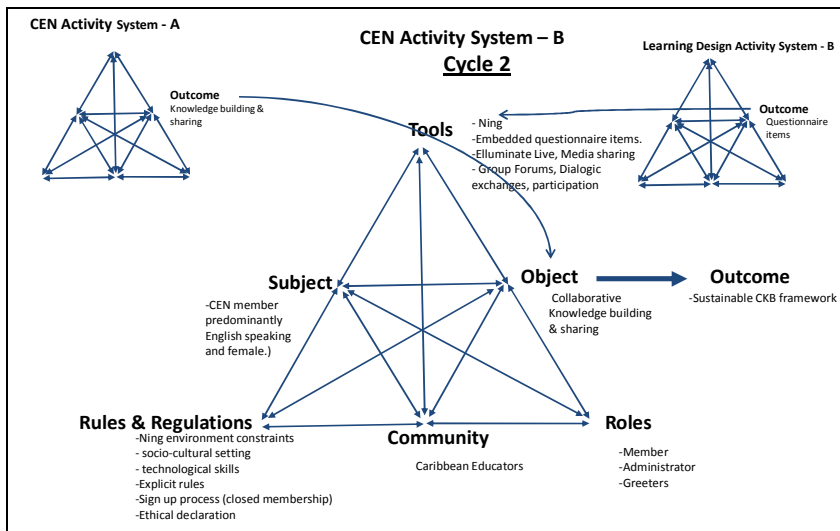
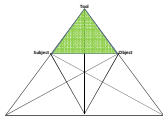
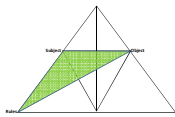
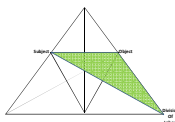
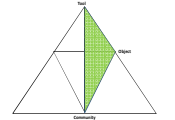

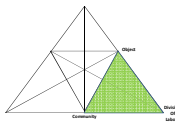


Figure 8.4 – CEN activity system – B
(Originally Figure 5.15)

The result of this exploration verified collaborative knowledge-building as the shared object within the CEN. Thus, in **Figure 8.4** the outcome from the CEN activity system – A (top left) became the object in the present 'CEN activity system-B'. Likewise the CPD questions from the previous cycle (Learning Design activity system-B, top right) were embedded as mediating artefacts in the CEN. Inserting the questions in the CEN sign-up process created an effective approach to collecting the data about the membership interests. The application of the AODM equally opened a way to capture a rich perspective of the CEN activity system, while it highlighted areas of tension that propelled further exploration. This application validated the AODM as a suitable approach to teasing out the complexity from the CEN, besides being a helpful learning experience for me as researcher and designer. **Table 8.1**, which reveals the outcome of the application of the AODM in the cycle, shows each generated research question with the associated tension and intervention. For example, for the **subject-tool-object** notation, the tension between the CEN-wide tool use was overshadowed by the dialogic activity that occurred in the groups. It therefore made sense to address this phenomenon through interventions that focused on such activity. The complete analysis of this mapping process, which is beyond the scope of this chapter, was addressed fully in Chapter 5.

Table 8.1 – Mapping research questions to tension and intervention
(Originally, Table 5.16)

Notation	Generated research questions	Contradictions
subject-tool-object 	What processes (tools) do individual members (subjects) of CEN use to collaboratively build and share knowledge (Object)?	Despite the focus on technological tools in wider network, dialogic activity within group forums is the most popular process.
subject-rules-object 	How does the absence of explicit guidelines (rules) influence the way individual members (subject) collaboratively build and share knowledge (Object)?	Most members indicate knowledge sharing, knowledge building as main reasons for joining CEN but only a few perform this activity.

<p>subject-division of labour-object</p> 	<p>How does the lack of clear roles and responsibilities (division of labour) influence the way in which individual members (subject) collaboratively build and share knowledge (Object)?</p>	<p>Members are encouraged to join groups, but most CEN members are not clear about their roles in creating, joining, sustaining groups; Group initiators motivate members to join groups of interest but are not clear on how the group should be guided or moderated.</p>
<p>community-tool-object</p> 	<p>How do the processes and conditions (tools) affect the way groups (subject) collaboratively build and share knowledge (Object)?</p>	<p>Emphasis on network-wide synchronous tool (Elluminate Live) but asynchronous computer mediated communication within groups was most popular activity in the network.</p>
<p>community-rules-object</p> 	<p>How does the absence of guidelines (rules) affect the way groups (subject) collaboratively build and share knowledge (Object)?</p>	<p>Group rules are largely implicit but some initiators give guidelines for the operation of the group</p>
<p>community-division of labour-object</p> 	<p>How do group initiators (division of labour) influence the way groups (subject) collaboratively build and share knowledge (Object)?</p>	<p>Group initiators have access to tools to facilitate collaborative knowledge-building but some appear to do very little to facilitate collaborative knowledge-building.</p> <p>Groups were created for collaborative knowledge-building but no clear roles defined to facilitate this.</p>

Adapted from Mwanza (2002)

Making sense of themes and challenges in this cycle required that I consult the literature, with specific reference to collaborative knowledge-building and group cognition (Stahl 2005; Stahl 2006). The additional focus on collaboration and cognition in groups, together with my reflection on the data and literature, identified the need to focus on and explore collaborative knowledge-building in the CEN group setting. This meant changing my focus of inquiry from the wider CEN synchronous computer mediated communication to asynchronous computer mediated communication in group settings. As a result, I was motivated to come up with a framework to mediate collaborative knowledge-building in groups within the CEN. The analysis in this cycle also indicated the need to focus on processes (what is done) and presences (the environment or condition) that mediated the collaborative knowledge-building process in groups. This focus also had implications for the

manner in which I conducted the design and research exploration, and exposed the need to adopt a more participatory design approach to making sense of the data that emerged from the exploration. From this cycle the CEN Advisory Group (CAG), a participatory design group, evolved. In retrospect, my actions in cycle 2 - researching the CEN with a view to making it better - revealed my realist ontological stance, i.e., that there was truth out there and by refining the instruments I could objectively get closer to it. However, in cycle 3 I adopted an interpretivist approach, which finally evolved into a more critical approach in cycle 4 (see Figure 8.11). As a consequence, the approaches in cycles 3 and 4 required me to include participatory elements as a way of negotiating truth in the research context. More reflection on these ontological dispositions between the cycles is forthcoming in **section 8.6**.

Cycle 3

In cycle 3, I provided an interpretation of the group activities, and highlighted the design suggestions that emanated from group discussions. This cycle, however, was not an exploration of the processes and presences that mediated collaborative knowledge-building within groups – this was to occur in cycle 4. **Figure 8.5** shows the first instance of the CAG's participatory design activity system as well as its interaction and influence from Learning Design Activity System-C. The present CAG activity system-A (**object**) of co-construction of knowledge through dialogue is influenced by the personal plane activity system (Learning Design Activity System-C (top left). Likewise, the tools from the Learning Design Activity System-C (top left) became the tools of the present CAG activity system-A.

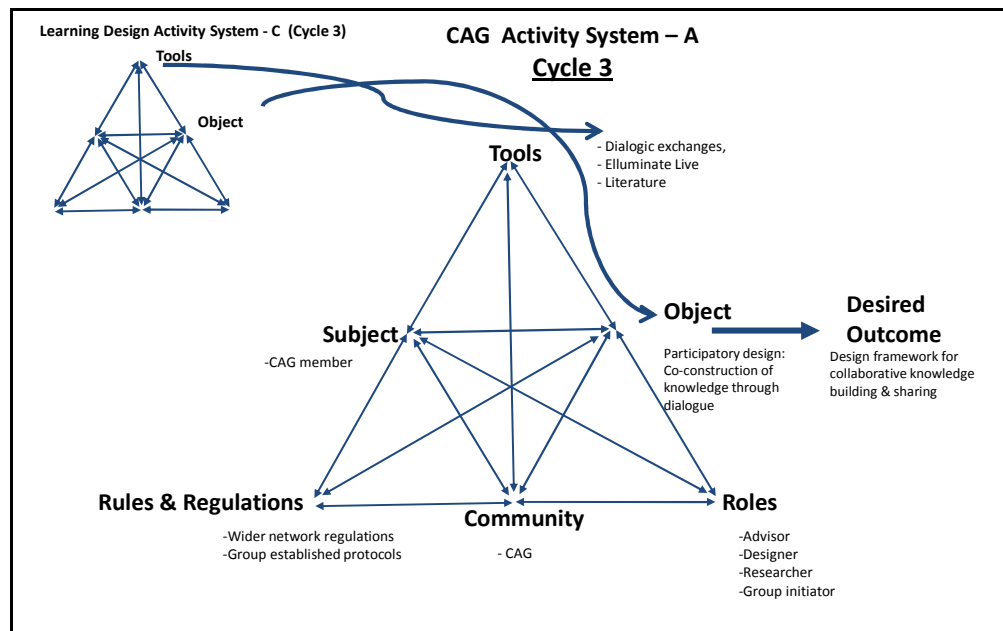


Figure 8.5 – The CAG Activity System-A
(originally Figure 6.2)

The rationale for this chapter was to provide an account of the interaction that occurred within the CAG, along with the knowledge that was shared prior to members of the group taking part in the participatory design activity in cycle 4. The exploration in this cycle did not address the research challenge of the processes and presences from the previous cycle. Instead, I used an AODM tool (Eight-Step Model) to explore the nature of the CEN Advisory Group (CAG) as the participatory design group. I wanted to brief the group members on the concerns raised in cycle 2 (Chapter 5), and solicit their support in coding a transcript of asynchronous communication of the most interactive CEN group (unit of analysis) as part of the exploration in cycle 4 (Chapter 7). Nonetheless, in this cycle a number of design suggestions arose from the synchronous interaction in the CAG. **Table 8.2** provides a list of the design suggestions from this participatory design synchronous dialogic activity in the CAG that I coded. These design suggestions were linked with categories that emerged from the literature review and my reflection. The highlighted design suggestions showed recurring links between 'moderating', 'framework suggestions', and 'guidance', indicating the need for a framework to mediate collaborative knowledge-building in the CEN, which was explored in cycle 4 (Chapter 7).

Table 8.2 – Coded design suggestions
(Originally Table 6.11)

Design suggestion	Description	Categories
Thematic Forums	Moderated forums from 3 to 4 generalised themes or topics as opposed to where anyone can create groups	Framework suggestions; Guidance; Moderating
Moderators for thematic forums	Role of moderator for thematic forums. Members can propose someone to serve as moderators of the thematic group. This can serve as a way of sharing the CEN- wide responsibility	Role definition; Guidance; Moderating; Framework suggestions
Generate Activity	Encourage volunteers to start a number of activities as they see fit	Moderating; Guidance; Flexible framework suggestion
Guidelines for Group Initiators	Group initiators need help initiating activities. Suggested that group outcomes in the form of questions could help. The object of the group should be embedded in the group guidelines	Guidance; Moderating; Framework suggestions
Teacher training forums	Inviting educators from University of West Indies to host events in CEN. Groups can make use of CEN tools to conduct regional meetings. If CEN provides the tool that enables collaboration, then that can generate some activity	Tool use with specific purpose; Guidance; Moderating; Institutional links; Event hosting; Tool accessibility
CEN country rep	Identify a person from each country who would serve as CEN ambassador, be responsible for promoting the community, and also moderate a group of interest	Framework suggestions; Guidance; Moderating; Role definition
Framework will be generated from activity	That we should focus attention on generating activity, then the guideline would emerge from the activity	Flexible framework suggestion; Activity focused
Focus on generating activity as well as guideline or framework	The focus should be on generating activity as well as developing the collaborative knowledge-building framework	Flexible framework suggestion; Activity focused
Framework should be flexible with fewer restrictions	That framework or guide should be facilitating activity, not restricting it	Flexible framework suggestion
Make goals of CEN clear and visible	The object of the CEN should be added to site structure	Network design suggestion; Sharable and visible CEN objective
Encourage collaborative, participatory activity	Advisory group should encourage and facilitate individuals who would like to engage in collaborative activities in the CEN	Guidance; Role definition
Encourage	Provide a focus on technology in	Technology mediation;

technology integration	education (professional development, schools)	Tool use with specific purpose; Tool accessibility
------------------------	---	--

Highlighted suggestions signify the need for a framework for mediating collaborative knowledge-building

Additionally, in this cycle, I presented a theorisation for the collaborative knowledge-building mediating framework, by proposing six themes which were described and linked to theories, as seen in **Table 8.3** below.

Table 8.3 – Linking categories to theory
(Originally Table 6.13)

Themes	Description	Theoretical Mapping
Tools	The appropriation of tools in collaborative knowledge-building in establishing, managing interactions and connections as a process of 'Artefactization'	Activity Theory
Moderating	Moderating the collaborative knowledge-building activity; Establishing roles and rules for moderating activity	Activity Theory
Reflective	self and group evaluative dialogue; metacognitive statements	Group Cognition, CoI
Community	A sense of identity and purpose, Group formation	Group Cognition, CoI
Social	Facilitating social interaction through open and welcoming dialogue	Group Cognition, CoI
Cognitive	Co-construction of knowledge; Negotiating group knowledge; Perspective sharing; Knowledge negotiation.	Group Cognition, CoI

The result of the theorisation, the nascent collaborative knowledge-building e-mediating framework, is illustrated in **Figure 8.6** showing the six themes. The illustration also shows how the notions of 'object' and 'outcome' from activity theory are represented respectively as the process and the presence.

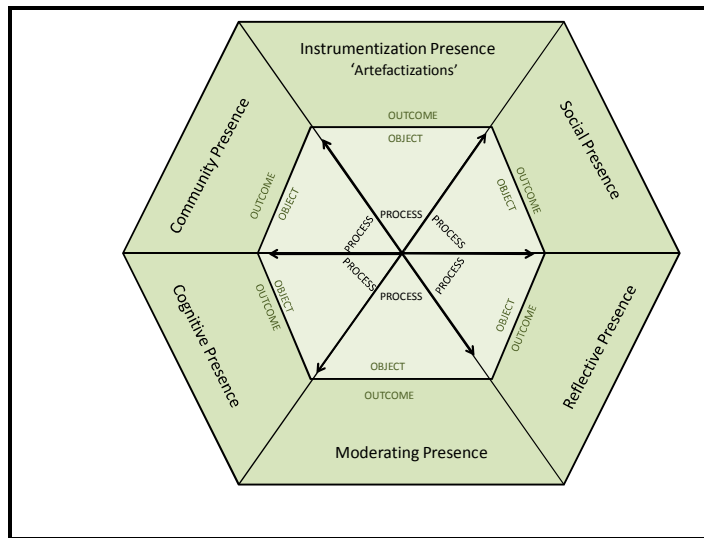


Figure 8.6 – The initial collaborative knowledge-building framework
(Originally Figure 6.14)

The interaction in cycle 3 produced useful design suggestions which served as starting points for my theorising the emerging collaborative knowledge-building framework. Another outcome of this cycle was the commitment of three members of the CAG to work as a participatory unit to explore the processes and presences in group dialogue in cycle 4. **Figure 8.6** represented the emerging conceptualising of the collaborative knowledge-building mediating framework that was advanced in cycle 4 of the action research.

Cycle 4

This cycle focused on a participatory design approach to making sense of the processes and presences that mediated knowledge-building in the CEN as a way of advancing a framework to mediate knowledge-building in the network. In this cycle, three members of the CAG and one other individual independently coded a unit of analysis of asynchronous computer mediated communication from the most active CEN group (the Diversity of Learning) (see **Table 5.3 & 5.4**, Chapter 5) in an effort to address the research concerns from cycle 2 (Chapter 5). **Figure 8.7** illustrates the activity system of the four coders working independently to arrive at coding decisions, part of which is seen in **Figure 8.8**.

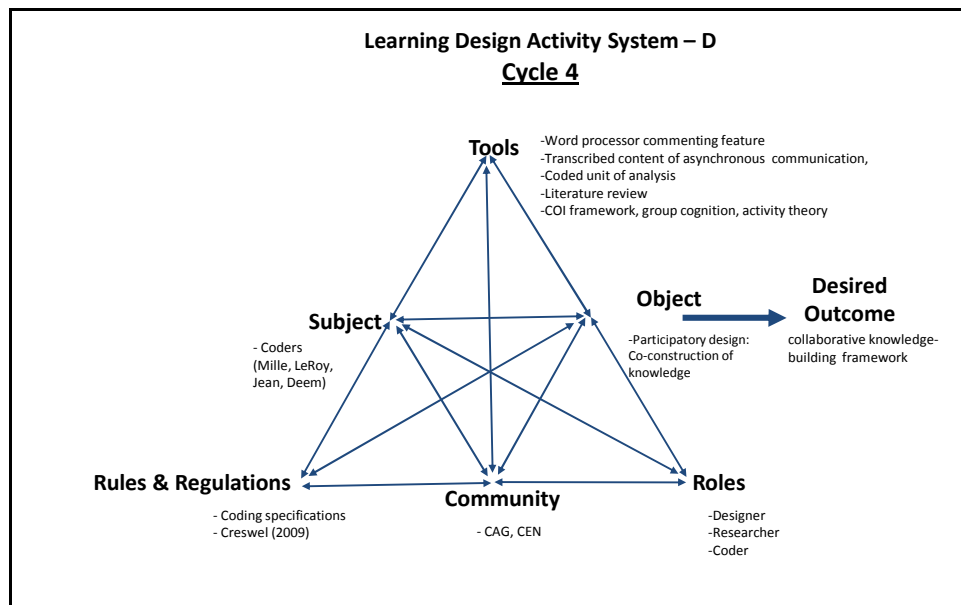


Figure 8.7 – The learning design activity system - D
(Originally Figure 7.2)

The challenge was to identify the processes and presences in the transcript. The activity provided a useful context for a process of shared meaning-making in what I identified as an inter-subjective meaning-making process. This notion of inter-subjectivity was in keeping with group cognition, and was a useful approach to combining the meaning from all coders. I did not regard this as a different level of coding, but as a way of valuing the group as the unit of meaning-making. A partial result of the group coding activity and inter-subjective coding is seen in **Figure 8.8**.

Message	Coder 1 (LeRoy)	Coder 2 (Mille)	Coder 3 (Jean)	Coder 4 (Deem)	Inter-subjective
1	Commendation, Concern for group activity, Interest in topic	Subject for discussion	Requesting information	Applauds group's initiatives. Concerned about particular interests. Invites discussion and suggestions. Shows eagerness to help others based on acquiring new knowledge expertise	Praise group; poses questions for knowledge-building and sharing;
2	Critical dialogue & questioning, Engaging language, Expert knowledge response, Explanation to previous comment, Posing questions, Reflective, Seeking clarification from post, Seeking comment	Elaboration on subject for discussion and request for clarification	Defining jargon	Expert opinion sharing. Open to new ideas and suggestions. Seeking clarity and inviting others to discuss and share. Seeking clarification	Seeking clarification; provide expert knowledge; inviting others in dialogue

Figure 8.8 – Group coding results for message unit 1 and 2.
(Originally Figure 7.3)

The group coding activity was a useful way of validating the processes and presences from the unit of analysis. Even though members coded the unit of analysis independently, there were many similarities which made the inter-subjective coding process a less daunting task. However, wanting to ground the processes and presences to the themes of the emerging framework for mediating collaborative knowledge-building in CEN groups, I felt that I needed to recode the unit of analysis to establish that link. As part of this recoding process, I revisited the six themes from the previous cycle (cycle 3). A review of the six themes, however, led to the synthesis of the 'reflective presence' with the 'cognitive presence' and the 'social presence' with the 'community presence'. I felt that both 'reflective' and 'social presence' were embedded themes in their respective synthesised themes. This synthesis resulted in the emergence of four presences which are represented as part of **Table 8.4**. I developed **Table 8.4** as an artefact to mediate the recoding of the unit of analysis as a method of linking the processes and presences to the four themes. Therefore I created operational definitions and indicators which guided the recoding process.

Table 8.4 – The coding guidelines
(Originally, Table 7.5)

Category	Operational definition	Indicators
<u>Cognitive presence</u> Key Processes: Reflection; Meta-cognition; Valuing; Cognition	The extent to which a group co-construct meaning through collaborative dialogue that demonstrates knowledge and skills, self-awareness, self-control, and self-regulation	<u>Cognition</u> Asking questions; Making inferences; Formulating hypothesis; Making decisions; Defining terms; Requesting knowledge-sharing; Sharing knowledge; Sharing opinions <u>Reflection</u> Evaluations; Criticism; Appreciation; Making value statements; Making reference to knowledge; Experience; Expertise; Acknowledging understanding. Eg. I understand, I think, I wonder (adapted from Henri's 1992 Analytical model p129)
<u>Community presence</u> Key Processes: Legitimate peripheral participation; Social interaction	This is the social function of the group and is evaluated by the extent to which a group fosters a sense of belongingness and cohesion through	<u>Affective</u> Use of Humour; Expressing emotions; Expressing value; Self-disclosure; Use of emoticons <u>Open communication</u>

	open dialogue	Continuing a thread; Referring to a previous comment; Asking questions; Complimenting; Expressing appreciation; Expressing agreement; Expressing disagreement; Personal advice; Agreeing to discuss further <u>Group cohesion & belongingness</u> Addressing or referring to member by name; Using encouraging language and tone; Inclusive pronouns; Showing interest in group cohesion; Interest in group activity; Greetings; Salutations; 'Small talk' (Adapted from Garrison et al. 2000)
<u>Moderating presence</u> Key processes: Designing and supporting collaborative knowledge-building setting; Roles	The extent to which whole group presences (Social, Cognitive and 'Artefactization') and processes are designed and facilitated through continuous negotiation and designing of roles and responsibilities	<u>Design</u> Sharing and assigning roles and ascribing duties; Defining and clarifying parameters of dialogue; Initiating themes for discussions <u>Facilitating</u> Encouraging collaboration and participation; Guiding dialogue; Facilitating meaning-making; Seeking to negotiate consensus; Reinforcing or acknowledging contributions
'Artefactization' presence Key processes: Selecting appropriate context; Tools	The extent to which a group harnesses technology, skills and knowledge to actively satisfy shared object	<u>Technological setting</u> Configuring tool for group use; Introducing new tool or link; Embedding external object in group space <u>Tool appropriation</u> Recommending tool; Displaying tool use; Sharing links; Sharing resources; Encouraging use of tool; Showing evidence of tool use. For example, Let me share; I know how to

The activities in this cycle afforded me the opportunity to learn how to link the research findings with themes from the literature as a method of theorising what I eventually labelled as the CEN e-mediating framework. I recoded the unit of analysis (the asynchronous communication of the Diversity of Learners group coded in cycle 3) and linked each message unit to corresponding processes and presences from **Table 8.4**. Using Atlas.ti, and guided by the mediating artefact (**Table 8.4**), I recoded each message unit and linked it to the presences and processes it conveyed. The result of the recoding and linking activity is seen in **Table 8.5**, where each message unit is linked with a particular theme or presence from the emerging framework.

Table 8.5 - Linked themes to each message unit.
(Originally Table 7.7)

Message Unit	Community	Moderating	Artefactization	Cognitive
1	X	X		X
2	X			X
3				X
4			X	
5	X			X
6			X	X
7	X			X
8	X			X
9	X			X
10	X	X		X
11	X	X		X
12				X
13	X			X
14	X			X
15	X			X
16	X			X
17			X	
18		X	X	X
19	X	X		X
20				X
21		X	X	

An illustration of the CEN e-mediating framework is shown in **Figure 8.9**. The analysis and reflection in this cycle benefited from my learning experiences and challenges in the wider research, the outcomes of which were shaped by each subsequent cycle. I discuss these research outcomes in the next section.

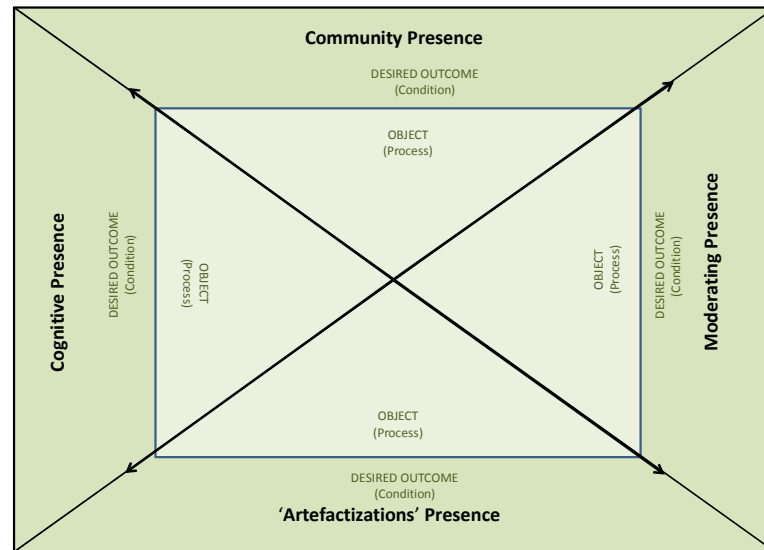


Figure 8.9 – The CEN e-mediating framework
(Originally Figure 7.16)

The CEN e-mediating framework, like the community of inquiry framework of Garrison et al. (2000) and the model of collaborative knowledge-building framework of Stahl (2000), designates learning and collaborative knowledge-building as a complex process of social interaction within online environments. As the community of inquiry framework is an analytical frame designed specifically for use in formal institutionalised settings, its use in my research context is limited. Similarly, Stahl's (2000) model serves more as a theoretical conceptualisation of the process of knowledge-building in small groups than an artefact that practitioners could use in the informal social networking setting to design and support collaborative knowledge-building environments. Thus, while Stahl's model is a useful analytical tool used by researchers to describe the collaborative knowledge-building process, it is not clear how group initiators in social networks can use it to mediate collaborative knowledge-building. Consequently, it is not a framework that practitioners can use to effectively design or shape collaborative knowledge-building in groups. By contrast, the CEN e-mediating framework is a design artefact, in that it serves as a tool for mediating the collaborative knowledge-building process in the informal social networking setting. This renders the framework useful to group initiators in designing and sustaining collaborative

knowledge-building activities within the group setting. The presences and processes serve as a useful heuristic guide for group initiators and members to mediate the collaborative knowledge-building process in their group. I explore this in more detail in the way forward (**section 8.7**), but before addressing this, I provide an account of the research outcomes.

8.3 The Research Outcomes

In this section I highlight the contribution which the outcomes of each cycle of this research project have made to research in this field. These outcomes are illustrated in **Figure 8.10**.

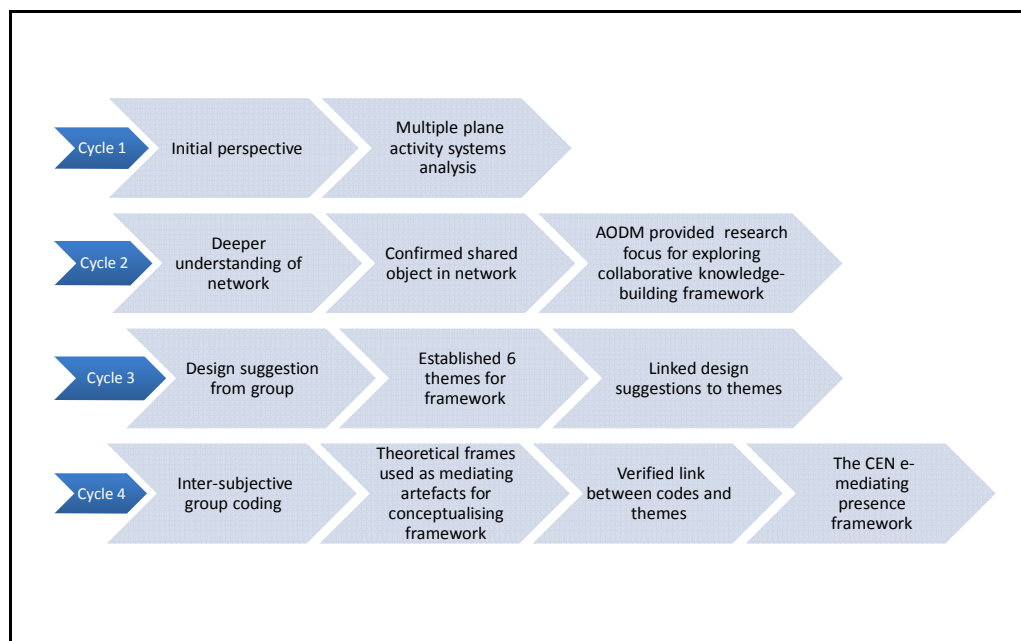


Figure 8.10 – Research outcomes by cycle

In cycle 1 (Chapter 4) the application of the multiple-plane activity system analysis to describe the interacting activity systems proved a useful technique for analysing and visualising the complexity of the activity system that I applied throughout the four cycles. In these cycles the outcomes of the preceding cycle shaped the subsequent one and, taken together, proved useful in interpreting the participatory element in the activity system. This approach made the outcomes of the research within this participatory context transparently part of the activity system. This

feature renders the approach useful in design contexts where participatory and collaborative approaches are utilised. The use of the multiple-plane activity theory analysis also afforded a way to visually represent the historical development of the action research project. To my knowledge, the application of this multiple-plane analysis has not been explored in an online learning design context, so its application in this research stands as a notable contribution. Likewise, the application of the AODM, first in cycle 2 (Chapter 5) and then in cycle 3 (Chapter 6), served as a very useful tool in understanding the context of the research. This is a meaningful contribution to the field, and, equally, its use in the informal social networking context is a new application that contributes to its utility as an activity theory methodological approach for designers. Thus, this research builds on Mwanza's (2002) conceptualisation of activity theory as an artefact that is applicable in the design for learning in online social networking settings. In cycle 4 (Chapter 7) my interaction with others in a group coding activity proved an insightful way of co-constructing meaning in what I conceptualised as an inter-subjective meaning-making process which served as a useful way to value the contribution of others in the participatory design activity. Another contribution of the research project is in the synthesis of aspects of group cognition (Stahl 2005; Stahl 2006), activity theory (Leont'ev 1978; Engeström 1987), community of inquiry (Garrison et al 2001) and Henri's (1992) analytical framework, a synthesis that proved to be a useful approach in theorising the CEN e-mediating framework. This theorisation led to the development of indicators for linking the codes to the theories. The ultimate contribution is the CEN e-mediating framework (see **Figure 8.9**) which is proposed as a mediating artefact for use in the collaborative knowledge-building process in CEN groups. The framework is not a panacea for collaborative knowledge-building in CEN groups, but rather a useful way of drawing attention to processes and presences that make for meaningful knowledge-building in the research setting. Intrinsically, the CEN e-mediating framework can be used by group initiators and group members to guide the development of the cognitive, community, 'artefactization' and moderating presence within their groups. The framework stands as a meaningful contribution to the field, since it builds on the use of activity theory in understanding collaborative knowledge-building. In particular, **Figure 8.9** (originally **Figure 7.16**) serves as a deconstruction of activity theory notation, thus moving away from seeing activity theory as always represented in the triangle format. Unfortunately, the framework needs further development in

order to be used by groups. This is necessary, since the framework contains 'reified' concepts that may not be accessible to group members. Thus, operationalising the framework in group settings requires the development of toolkits that can deconstruct the framework into something that is more accessible and of value to members of the CEN. This is the subject of discussion in the scenario in **section 8.7**.

It would be remiss of me to conclude this section on the contribution made by the outcomes of this research if I did not state that it also benefited my development as a learning designer and researcher. As a new researcher and learning designer, I initially grappled with the confidence needed to position myself in a field that was new to me. The experience in the research project, however, marked a gradual turning point in how I visualised myself as an academic researcher as well as a learning designer. My interaction and dependence on others in the network, the application of theoretical frames, and the exploration of themes in the literature increased my understanding, experience and competence in the learning design process within the informal social networking setting. This admission reinforces the need for systematic and informed processes and presences that make allowance for suitable collaborative knowledge-building that would serve as a useful means of conceptualisation for learning designers within informal social networking settings. Therefore, the most meaningful outcome of this research project was my transformation as researcher and designer, as I experienced first-hand the recursive and messy nature of design for learning in the social networking setting. I reflect on the value of the research project in the next section.

8.4 The value of the research project

This section addresses the significance of the research project by highlighting the added value that it had for others within the research setting. I begin with the value of the research project in my role of researcher and designer in the CEN. I draw on reflections from journal field notes. As researcher and designer, I was driven to explore the value by the desire to use an approach that was methodologically focused:

The activity [cycle 1] has [given] me additional motivation to focus on the design and further development of CEN as a participatory activity. One of

the greatest concerns was about methodology. The additional reading and course in action research is making this even more apparent that the approach needs to be justified in a way that gives clarity to issues of methods for data collection. It has made it clear that I must give an account of what I am doing and how I am thinking. Recent readings [confirm] Activity Theory would be an acceptable tool for understanding the CEN, and now more specifically the design process.

Field notes, September 15 2009

I am interested in using a design methodology that would be appropriate for the sustainable development of the CEN, given its very complex structure of membership interests but I am put off by the idea of a linear model. It suggests that the work process of learning, design and development is linear and does not give a good framework for understanding learning that takes place in online environments. The initial design phase may have been influenced by personal [behaviourist and cognitivist]...ideas but is shaping towards a more inclusive participatory constructivist approach. Nothing is wrong with this, in fact, the evolutionary aspect of this process brings more responsiveness to the whole ID [instructional design] process.

Field notes, September 16 2009

A review of earlier reflections in my role as designer gives an insight into my desire to apply a methodology consistent with activity theory. In addition, I wanted an approach that could allow for a more open, inclusive and context focused design approach. My focus on activity theory is evident in the thesis through the application of AODM as a methodological tool, the multiple-plane activity theory analysis as a descriptor of the activity systems, and the synthesis of activity theory principles in the CEN e-mediating framework. I recognise the meaningfulness of activity theory as a theoretical frame that will potentially inform my future research activities.

I invited coders Jean and Mille to offer reflections after viewing an interactive Voicethread (<http://voicethread.com>) presentation of the research findings. Thus as a way of building on and valuing the participation and collaborative element within the research project, I include reflections that they offered:

I learned the value of open coding in a situation that was new to me. I[had] heard about activity theory, but exposure to it as a coder directed me to learn new concepts and think outside of my sphere of expertise. When I studied your Voicethread presentation, I saw 'meat' to the activities that we take for granted. We engaged in activities without a deep understanding of the socio-political and cultural habits that we practise. It was interesting to see it diagrammatically. Participation in the advisory group took my membership in CEN to a different level. We looked at ways of strengthening the CEN and that evolved into a [sub-network] or group where we found strength in each other, critiquing one another's work, sharing resources and engaging in another collaborative knowledge base-which, by the way, is the philosophy of CEN. This is an excellent medium to foster communication among Caribbean educators. I know there was also an attempt to start a magazine. That would be an excellent project for the future. Groups can submit their findings or implications of their conversations in this magazine. There is the potential for more online conferences. The possibilities are endless.

Jean, CAG member, March 8th 2011

As a Caribbean national first and foremost, [I sighed with relief at the existence of] CEN and the projects and processes associated with it. The relief was based on a perception which I had prior to the networks formation - the Caribbean is not ready for the appropriate use of technology to deliver educational resources but also that [the Caribbean] was not ready to embrace change as part of its mantra in moving forward with all its visions and goals. Being part of the network and most importantly CAG, I realised that the perceptions and visions I have of and for our region are shared by others. And that we all at some time encountered the same rewards and challenges with contributing to our region.

CEN, to me, creates a platform for the region to seriously consider what makes us so unique. For centuries we have adopted and adapted solutions from all around the world and they never quite fit. This forum, to me, will create that platform where ideas can be generated, implemented and tested based on the unique characteristics we possess as a region.

One thing that I have learned from my peers on the network is resilience. Resilience manifests itself in many forms and one such form is acknowledgement...many have acknowledged CEN and have since recognized that sometimes solutions need to start at the bottom, and then build upwards if ever we are ever to move forward.

So knowing what is happening regionally and knowing what individuals think of solutions that are implemented, and then thinking maybe we can collaborate or just share what we have learned [is] a great start with CEN as the conduit. I have hope for more progress in our region.

Mille, CAG member, March 10th 2011.

8.5 The Challenges and Limitations

The research project was not without challenges and concerns, however. One major challenge was the complexity of multiple-plane activity systems analysis, which required careful and constant revisions in the researcher and designer plane activity systems. A combination of the researcher and designer planes could have reduced this complexity, but while dual researcher and designer focus could have been combined, I felt it was necessary to retain the separate focus in order to highlight the historical development of the interacting and embedded activity systems. This development is seen in the activity theory map in Chapter 3, which outlined the iterations of activity systems analysis that runs throughout the research project. Likewise, to my way of thinking, the multiple-plane analysis mirrors the complexity of design in the informal social networking context, a factor that serves to bring responsiveness to the approach. This factor therefore, requires that attention should be given to the interacting activity systems as a way of declaring an understanding of the complexity involved. Even though activity theory offered a constrained and challenging perspective, its use in showcasing the development of the different activity systems proved useful.

Another challenge which could also be seen as a criticism of the approach used in this thesis is found in the first cycle (Chapter 4). The less successful exploration in the first cycle lacked the rigour to be counted useful. I could have started narrating the story from the application of the AODM in cycle 2 (Chapter 5), but as this was an action research, starting with the less successful account in Chapter 4, acted as a

way to acknowledge the development and learning that the research project facilitated. This research project was not a quest for ideological or methodological purity: rather the project served as a way of making sense for me as an inexperienced academic researcher and designer. This draws attention to the criticism of action research, which was addressed in Chapter 3. I should reinforce that the goal in this research project was not to gain generalisability as used in the traditional sense; rather, this project focused on an exploration, in its natural setting, to discover, to support, and facilitate the further development of the CEN. What I learnt from this process was that while action research was promoted as systematic, in my experience it was more messy, iterative and meandering, and at times difficult to pin down. There are resonances here with critical social literature which promotes action research as a critical, participative meaning-making process (Kemmis 2001; Cohen et al. 2007). Nonetheless, the other benefits gained from my experience using action research in the research project were conducive to my development in that they overshadowed the complexity inherent in the process. If I had to conduct this research exploration again, I would, without a doubt, choose action research, but would pay more attention to making the design process more participatory and inclusive from the beginning, rather than at the end. In that case, this participatory approach would provide for a deeper reflection and critical perspective that would make the outcomes of research more liberating and emancipatory (Carr & Kemmis 1986). However, such a participatory design process requires much more experience and training in order to be effective. Additionally, I could have started with a comprehensive coding procedure, but I wanted to empower coders and ground the meaning-making in the context - I valued their views and found it a worthwhile learning experience.

8.6 Parting reflections: The nature of the learning design exploration

In this section I take a step back and make a reflectively reappraise the action research from my perspective of designer and learner in the research process. This reflection focuses on defining the nature of the learning design exploration, by attending to the wider perspectives of the research journey. The reflection is divided into two sections: (1) reflections on theory and (2) reflections on methodology.

However, as it is difficult to reflect on the theory without being drawn to the corresponding methodological implications, I shall begin by reflecting on the nature of the theory and how it is linked to the research setting.

Reflections on theory

In this research, socio-cultural theory was useful for conveying the mediation necessary for the collaborative knowledge-building process. However, socio-cultural theory lacked the bounded perspective of the mediators in collaborative knowledge-building that activity theory provided. I needed an analytical frame that corresponded to the ontological assumptions of socio-cultural theory; a framework that provided a lens for interpreting the activity, interaction and participation of members within a bounded setting; a framework that allowed me to analyse the development of the tools that were used, and the impact of their use within the wider research setting; a framework that allowed me to identify tensions so that I could intervene as designer and make changes. For these reasons activity theory, building on the socio-cultural framework, provided a useful way of understanding the relationship between components within a socio-cultural frame. Activity theory also offered some useful tools and ways of analysing situations in the research, while it served as a foundation for theorising the CEN e-mediating framework (**Figure 8.9**).

Moreover, the exploration confirmed some initial suspicions of the design process in the research setting, where it is easy for designers to focus on technological tools and miss the broader socio-technical interplay. It is therefore possible for designers of online collaborative knowledge-building environments to make the mistake of seeing their role purely from a technical perspective - a position that is in antithesis to the socio-cultural view. A socio-cultural view would promote the stance that technological tools alone do not determine collaborative knowledge-building. A wider socio-cultural insight is needed in order to create systems that work, that serve the needs of users of the collaborative knowledge-building environment - one that does not depend solely on technologies but on a wider socio-cultural context. Therefore the framework was developed for the context, but its utility needs to be confirmed through its application in CEN group settings. This appraisal of the CEN e-mediating framework is addressed later in the chapter in the way forward section. Activity theory in the research setting also shares some affinity to action research.

Both activity theory and action research lean on the idea of the historical construction of reality (Engeström 2000; Raelin 2009), a term that is used to mean that reality is construed over time by focusing on activity within the research context. This historical development has been made transparent through the use of multiple-plane analysis throughout the thesis, and has been showcased in the activity systems map (see A3 insert). The map illustrates the change in the activity systems over the action research cycles. Thus, from the action research and activity theory standpoint, reality or truth was being revealed over time.

From a methodological standpoint, the critical reflection and dialogue with others in the research context provided a deeper insight into my role of designer and researcher, and challenged my ontological underpinnings in the research setting. While I maintained that I subscribed to normative-evaluative (Carspecken 1996) truth claims (see Chapter 3), this was only addressed in cycle 4 (Chapter 7) through the participative and collaborative element. On reflection it appears that my perspective evolved from a positivist one (see cycle 2) to an interpretivist one (see cycle 3) and finally to a critical one (see cycle 4) an evolution which marked distinct historical moments in the research journey. The revelation of this transformation is in keeping with the constant search for truth or reality that was bounded in the context- a reality that was neither objective nor subjective, but negotiated through critical engagement. This exploration for truth in context exerted a liberating influence on the development of my role as a researcher, seeing that I was able to find a middle ground that resonated with my values (see Chapter 1). **Figure 8.11** illustrates the development of the epistemological position. Design, defined in this context, therefore, is a dynamic, on-going process of critical engagement and negotiation which requires the participation of others as a means of advancing the process of collaborative knowledge-building in the network.

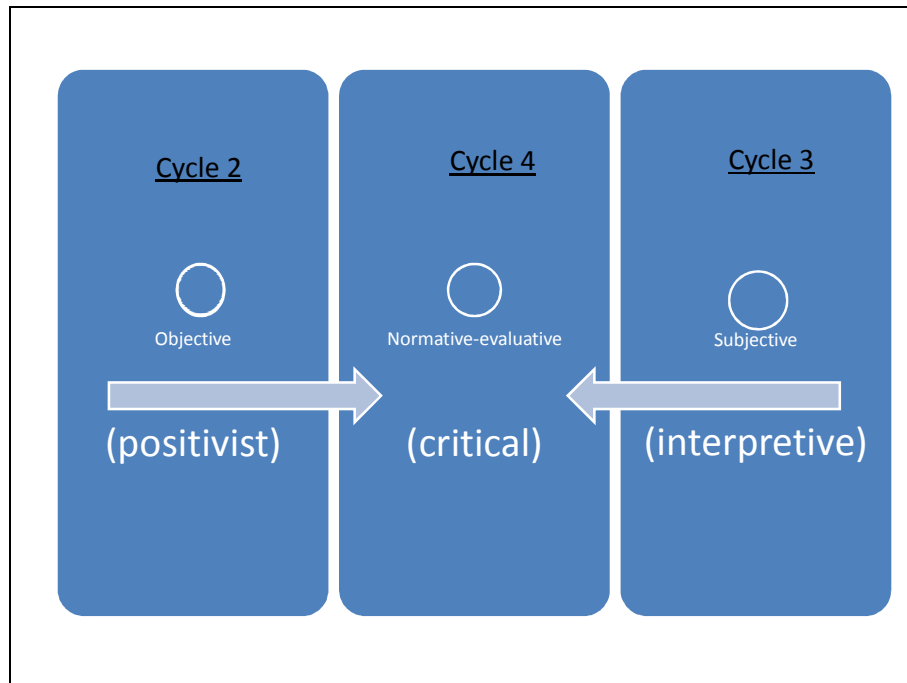


Figure 8.11 – The epistemological development in research

Thus the search for truth meant that I had to actively seek out others and negotiate truth claims that were bounded by the context. Carr & Kemmis (1986) recognised this as an important part of a dialectical reality where

Truth and action are thus interdependent, and exist in a social matrix within which meanings are constructed and actions can be given meaning. But coming to mean does not happen in a vacuum. It is a process which takes place in and through history, even if only the history of a small group or only for a short period of time.

(Carr & Kemmis 1986, p.181)

Therefore the action of the research in this setting was a search for truth – a search for meaning that was not easily encapsulated in either objective or subjective truth claims. Instead truth claims required my active involvement with others as mediators in a process that was socially-constructed and historically-embedded (Carr & Kemmis 1986).

Thus the manipulation of activity theory and the socio-cultural theory transformed them into valuable frames that supported the way I approached the research exploration and methodology. This will receive some attention in the next section.

Reflecting on methodology

As a methodological approach, action research served as a useful method with which I was able to make sense of the exploration. That being said, this exploration was not a straightforward task, so it is difficult to describe the nature of the methodological exploration in one neat category. The nature of the exploration was marred by the complexity that mirrored the context in which the research was situated. Despite this complexity, the exploration was largely theoretically-based, with participatory and emancipatory consequences.

As identified in the previous section, theory played a central role in how I approached this exploration. I drew on socio-cultural theory to frame the methodology and other theories and approaches in the meaning-making process. While lacking the full participatory element, the approach functioned as a way of working with others to make sense of the exploration. This participatory approach was not without feelings of gratification to me in my role of explorer, in that I could say that I did this with the help of others (participatory); with the help of tools (theoretical); and that I was transformed by the first-hand experience and discoveries. This transformation, consequently, is a liberating story worth sharing, even if I am overawed by the magnitude of work that still lies ahead in continuing to develop the CEN and my own understanding.

As part of this continual search for normative-evaluative truth claims, I presented a short collaborative post-cycle 4 presentation (using [www.voicethread](http://www.voicethread.com)) of the research exploration, which highlighted the challenges and outcomes, and I welcomed the coders/CAG members to post their criticism and feedback as a way of forecasting the way forward. Some critical reflections by coders/CAG members have revealed that in spite of my research efforts, the way forward remains largely unexplored territory awaiting additional participatory and critical investigations. I begin with the critical reflections of Jean (coder 3):

What would be interesting is to find out [is], what are the outcomes of what you have researched to actual classrooms in other words the outcomes of this collaborative knowledge base did they have any positive or negative

impact in the classroom because I think that we ought not to collaborate as learners without some sort of outcome for our personal professional development and ultimately for the student learning. That may be an interesting future project.

Here Jean outlines the opportunistic benefits of collaboration, and presents a challenge for the way forward as being unbounded by the online context in which this research was situated. Interestingly, Mille's (coder 2) critical reflections point more to what she perceived as the inadequacies of the frame to highlight the skills needed to synthesise the four presences:

What I am missing from this diagram as well as the diagram prior...although you are saying that the view of technology used and the use of such technology is reflected sufficiently in the 'artefactization' presence, I think what is missing there is just one keyword there is 'skill' we can have the tools present, the knowledge and expertise to use these tools seem to be lacking or not appropriately measured and when looking at some of these diagrams I am not seeing that really illustrated sufficiently between the cognitive presence and the 'artefactization' presence...because you can have the tools, you can have the cognition, the ability to...but I'm not sure If I am really explaining myself sufficiently because the cognitive presence does kind of touch [on] the ability but the actual, how should I say, know-how to use that cognition, to use the tools which are present in the 'artefactization' so between the lower left quadrant or the lower left triangle which is the [cognitive] and the 'artefactization' [presences] I think there needs to be some mediating factor, not a mediating presence but a mediating factor of skills and knowledge that we assume are present...viewing it from your eyes in terms of the slides suggest that there is not only many more analyses that really need to be done in depth but also we need to look at how the tools assist with the community and I don't think that we've looked at how the tools or the knowledge of the tools, of the community members affect the creation of the environment and I think that is one part that is seemingly missing from the whole thing. So as a coder I was hoping to see that coming out of the analyses both from my own reflective perspective as well as your perspective as the principal investigator. As a member of the [CAG] I think we have reached further than I thought we would have reached simple because it's the Caribbean and looking at technologies and the use of technologies in the Caribbean as a long term activity is seemingly difficult as for some reason we seem to have short term use when it

comes to technology in education and as a member of CEN I am seeing it growing potentially much further if we get the right people in there with the right views and the right thoughts to drive the purpose of the environment in the group.

Jean's and Mille's critical reflections reveal much about the outcomes of the collaborative meaning-making process in the research. This collaborative reflection serves as a way of critically assessing the merits of the participatory approach. Carr & Kemmis (1986, p.199) argue that "all those involved in the research process should come to participate equally in all its phases of planning, acting, observing and reflecting." To judge by this measure, my research exploration was less democratic; the participative elements in the final stages were used as a scaffolded approach to engage the CAG and introduce emancipatory elements as part of a gradual change process in which they took on co-researcher roles. Quintessentially, this exploration began as a lonely journey, but along the way I was accompanied by others who provided the collaboration necessary to make sense of the data, and I depended on tools and conceptualisations that were constructed socially and manifested historically. The way forward then is more than a set of neatly packed suggestions; it includes a complex set of challenges as a way of building on the participatory and critical efforts in the research journey while at the same time addressing some of the concerns presented by Jean and Mille.

8.7 The way forward: examining the utility of the framework

While this is the final chapter of the thesis, there is still work left to be done to put the framework to use. The way forward therefore is more about giving members of the network the opportunity to shape the e-mediating framework than it is about submitting recommendations. I recognise that for this framework to be of value to the CEN, one of the key actions has to be to involve the wider CEN, perhaps through a reflective workshop where the framework will be introduced to the wider membership. This would allow for further consultation and examination of the utility of the framework. Hence, instead of presenting a set of prescribed guidelines and recommendations, through the critical lens of designer I shall construct a scenario

to ground how the framework could be applied in the CEN and similar group settings. 'Scenario', as used in this setting, is a depiction of a probable future situation which acts as a forecast of how a group will conceptualise the framework as a means of examining their practice or activity. As this is a focus on a group object-oriented activity, I shall draw on activity theory and provide an interpretation of an activity system within the scenario.

The scenario: Web 2.0 and teaching Group

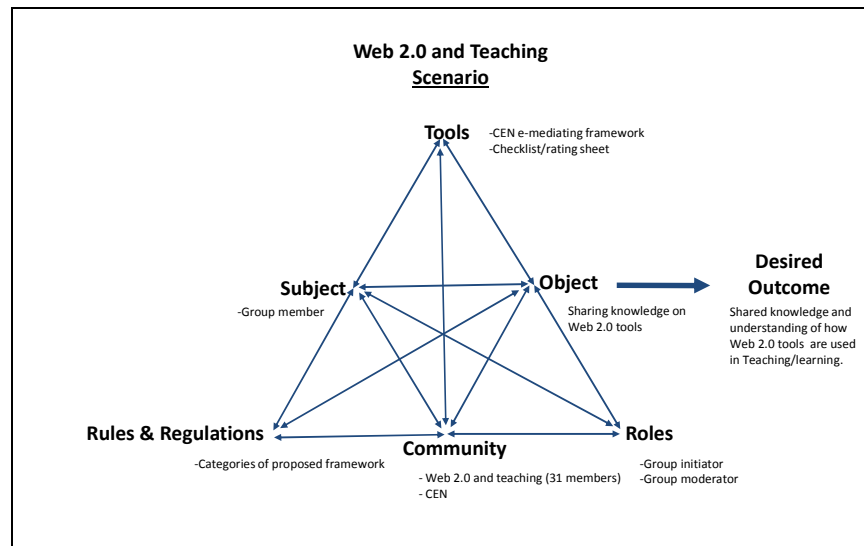


Figure 8.12 – The Web 2.0 scenario activity system.

The scenario presented here assumes that members within the web 2.0 and teaching group desire to work together collaboratively, as they share knowledge with one another. The web 2.0 group consists of 31 members, only 6 of whom are active members. A central part of working together is the shared condition of the practice or activity. Wenger (1999, p.45), for example, suggests that "working with others who share the same conditions is thus a central factor in defining the enterprise they engage in." The activity in the group would involve the group initiator's (division of labour) using the CEN e-mediating framework (mediating artefact) to guide members of the group (community) to collaboratively share knowledge on how web 2.0 tools could be used by educators. Thus, sharing knowledge about web 2.0 tools in an education setting could become the working space (object) that could aim towards a shared understanding of how these tools

could be used by educators (desired outcome). The CEN e-mediating framework (mediating artefact), however, is not in a state in which it can be used by the group initiator, so it would require a toolkit that would serve as a way of signifying the presence and processes in CEN groups. For example, an interactive scale or check list might be useful. This might be in the form of a simple rating feature accessible to all group members, or a more elaborate rating process that would be accessible to group initiators and members as a way of evaluating the presences and processes in their groups. This would act as a benchmark and reflection on the presences in the group. Members using this toolkit would assign a rating to the group as a whole. Following a review of these rating, members would decide how they would go about improving the group rating in particular presences. This would require members to focus on the processes that formed part of the presences. Members would therefore need to take individual action as part of the group collaborative knowledge-building activity. For example, to improve the rating in the community presence, members would need to improve the social interaction and participation within the group. This would involve the use of actions such as referring to a poster by name, expressing emotions, using humour, using emoticons, expressing appreciation, using encouraging language and tone, using inclusive pronouns, and greeting members. The key process in community presence is social interaction and participation, which imparts a sense of belonging and inclusiveness to members, drawing them from the periphery into the core of the group. As a way of improving the cognitive presence rating, the six active members could find ways to draw those on the periphery into the collaborative knowledge-building discussion space. This would involve the use of processes such as asking questions, defining terms, making reference to experience, acknowledging understanding and making inferences (see **Table 8.4**).

The scenario highlights the strong relationship between the four presences. For example, I anticipated that it would be easier for active members to draw those on the periphery to collaborate and share knowledge if they first focused on the 'community presence' as a way of making members feel that they belonged. The rating awarded within the group could work as a visual reminder of the need to sustain the presences within the group. As such, it would make sense if this rating were a visible artefact as part of the group description. Likewise I could use these ratings in my capacity as designer to continually appraise the utility of the framework throughout the network. The process of rating and displaying of results poses some technical design challenges that would require programming aspects of

the social networking platform so that the rating and the display are embedded items within CEN groups. Unfortunately the scenario did not address how the framework could inform classroom practice. This is the focus of the next section.

Reflection on Scenario

In **section 8.6**, Jean provided a critical reflection that pointed to the need to inform professional practice in the classroom. This need is also reflected in the scenario. I therefore provide a reflection on the scenario that seeks to address this, which forms part of a plan for the way forward.

The focus on classroom practice suggests that there is need for a process or professional development model into which the e-mediating framework could fit. This would require an additional research cycle to fully understand. However, the development and repurposing of this framework into a professional development setting resonates with an expansive learning approach (Engeström 1987). Daniels (2004) contends that expansive learning is the capacity of individuals within an activity system to interpret and expand the meaning of the object of activity as a way of responding to the contradictions that give rise to transformation. Nonetheless, expansive learning is a multifaceted process which includes expansive learning as the transformation of the object; movement in the zone of proximal development; cycles of learning actions; boundary crossing and network building; distributed and discontinuous movement and formative interventions (Engeström & Sannino 2010). Consequently, any attempt to repurpose the e-mediating framework in a professional development setting would be adhering to an expansive learning approach. To this end, I propose a plan, act and review cycle where the dialogic and reflective processes serve as key components in the development of the presences. The scenario revealed that the e-mediating framework could serve as a tool that highlights the presences where the dialogic and reflective process embeds its use and utility in action. Additionally, there is support to suggest that reflection or reflective processes are effective professional development approaches (Schön 1983; Moon 1999; Leach & Moon 2000b; Knight 2002). However, I draw on the work of Schön (1983) in advancing a framework that values reflection-in-action and reflection-on-action. I also put forward the notion of reflection-on-plan as a way

to attach importance to the careful thinking that takes place before the acting. This conceptualisation is reflected in **Figure 8.13**. The diagram shows the e-mediating framework as the central component in the form of reflective questions or a checklist (toolkit). The cycle starts with the plan where an espoused theory is offered. Group members are required to reflect on this plan before moving on to the next stage of the cycle. The act stage is where group members perform the task. Members will use the mediating toolkit as a way of understanding how best to sustain what they are doing. The theory-in-use approach serves as a reflection-in-action and provides the basis for the final stage in the cycle. In the final stage – review - the e-mediating toolkit is used as a way to understand what was done. This reflection-on-action is recognised as a way of evaluating how members support the group presences while performing the task.

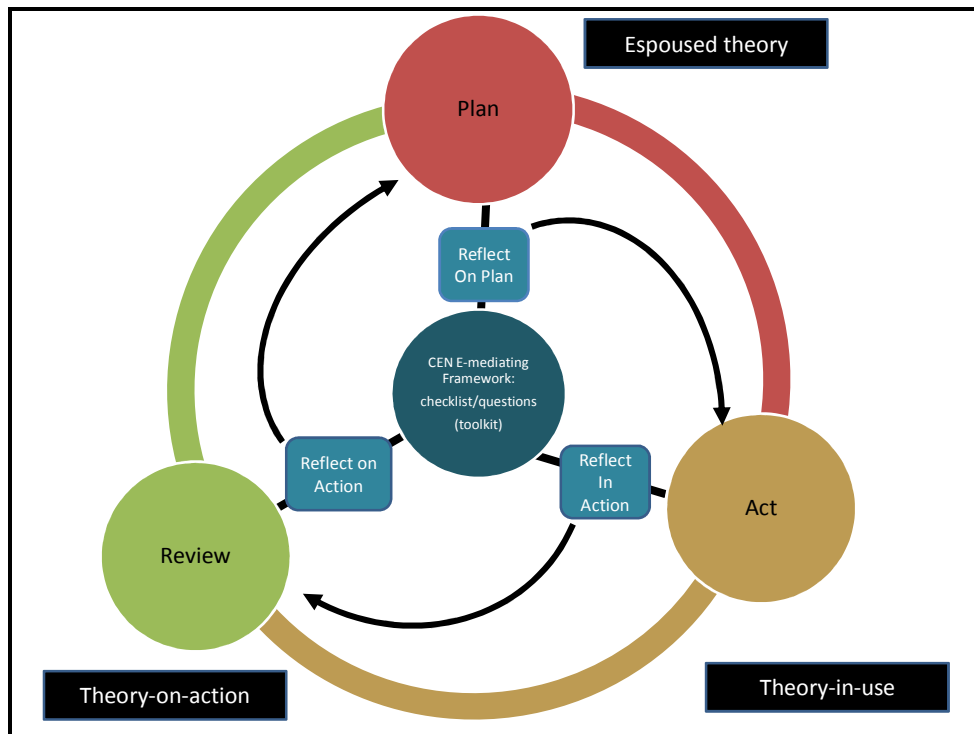


Figure 8.13 – Proposal for classroom practice implementation

Disseminating research

Another challenge is disseminating the research in ways that would make it meaningful to design practitioners and CEN members alike. **Table 8.6** offers a suggestion of how this can be achieved.

Table 8.6 – Disseminating the research

	Local	Practitioner (designers), Researchers
contribution	CEN collaborative knowledge-building framework	Learning design approach using activity theory within an action research paradigm in social networking setting
medium	Collaborative Multimedia presentation (www.voicethread.com)	conference papers
Mode	co-presenting	Individual, co-authored papers with CAG

The way forward also requires sharing the research with others in the local CEN setting as well as with others outside this context. This includes sharing the research in the Caribbean setting.

9. References

- Adams, C., (2005). A Personalised Approach to Continuing Professional Development (CPD). In GTC/ Institute of Education Conference. University of London: University of London. Available at: www.gtce.org.uk/documents/publicationpdfs/policy_0107_cpd.pdf [Accessed April 22, 2009].
- Akyol, Z., Garrison, D. Randy & Ozden, M.Y., (2009). Development of a community of inquiry in online and blended learning contexts. *Procedia - Social and Behavioral Sciences*, 1(1), pp.1834-1838. Available at: <http://www.sciencedirect.com/science/article/B9853-4VVXVR8-C6/2/6e10c7b57888b5fc336a65fb91c8d72e> [Accessed September 20, 2009].
- Ally, M., (2004). *Foundations of educational theory for online learning* 1st ed., Canada: Athabasca University Press.
- Andersen, P., (2007). *What is Web 2.0?: ideas, technologies and implications for education*, United Kingdom: JISC: Technology and Standards Watch. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.108.9995&rep=rep1&type=pdf>. [Accessed September 20, 2009].
- Anderson, N. & Henderson, M., (2004). e-PD: blended models of sustaining teacher professional development in digital literacies. *E-Learning*, 1(3), pp.383-394.
- Anderson, T., Rourke, L., Garrison, D. R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. *Journal of Asynchronous Learning Networks*, 5(2), pp.1-17.
- Arbaugh, J.B. et al., (2008). Developing a community of inquiry instrument: Testing a measure of the Community of Inquiry framework using a multi-institutional sample. *The Internet and Higher Education*, 11(3-4), pp.133-136. Available at: <http://www.sciencedirect.com/science/article/B6W4X-4SPYKM2-1/2/abc475885aa41c7cd62d2e6765f6d5ad> [Accessed September 20, 2009].
- Argyris, C. & Schön, D., (1991). Participatory Action Research and Action Science Compared. In *Participatory Action Research*. NJ: SAGE, pp. 85-96.
- Armstrong, V. & Curran, S., (2006). Developing a collaborative model of research using digital video. *Computers & Education*, 46, 336-347.
- Avalos, B., (2000). Policies for teacher education in developing countries. *International Journal of Educational Research*, 33(5), pp.457-474. Available at: <http://www.sciencedirect.com/science/article/B6VDF-41TWJJPY-2/2/d724c52eca82e187bdb081fdf268b377> [Accessed May 1, 2011].

- Bakhurst, D. (2007). Vygotsky's demons. In Daniels, H., Cole, M., & Wertsch, J. V. (Eds.), *The Cambridge companion to Vygotsky* (pp. 50-76). USA: Cambridge University Press.
- Barab, S. A., Barnett, M., Yamagata-Lynch, L., Squire, K., & Keating, T. (2002). Using activity theory to understand the systemic tensions characterizing a technology-rich introductory astronomy course. *Mind, Culture, and Activity*, 9(2), 76-107.
- Barab, S. & Kling, R., (2004). *Designing for virtual communities in the service of learning*, USA: Cambridge University Press.
- Barab, S. & Squire, K., (2004). Design-based research: Putting a stake in the ground. *Journal of the Learning Sciences*, 13(1), pp.1-14.
- Beckles, H. & Shepherd, V., (1991). *Caribbean slave society and economy: a student reader*, London: New Press.
- Beetham, H. & Sharpe, R., (Eds.), (2007). *Rethinking pedagogy for a digital age: designing and delivering e-learning*, New York: Routledge.
- Berger, P.L. & Luckmann, T., (1966). *The social construction of reality: a treatise in the sociology of knowledge*, New York: Irvinton Publishers Inc.
- Bodker, S., Greenbaum, J. & Kyng, M., (1991). Setting the stage for design as action. In Greenbaum, J., & Kyng, M. (Eds.), *Design at work: cooperative design of computer systems*. New Jersey: Lawrence Erlbaum, pp. 139-154.
- Boer, N.-I., van Baalen, P.J. & Kumar, K., (2002). An activity theory approach for studying the situatedness of knowledge sharing. In *Proceedings of the 35th Annual Hawaii International Conference*. International Conference on System Sciences. Hawaii: IEEE, pp. 1483-1492. Available at: http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=994017 [Accessed Nov 25, 2010].
- Borko, H., (2004). Professional Development and Teacher Learning: Mapping the Terrain. *Educational Researcher*, 33(8), p.3.
- Boyle, T. (2008). The design of learning objects for pedagogical impact. In Lockyer, L., Bennett, S., Agostinho, S., & Harper, B., (Eds.), *Handbook of research on learning design and learning objects: issues, applications and technologies* New York: IGI Global, pp. 391-407.
- Brereton, B., (1985). *Social Life in the Caribbean 1838-1938* 1st ed., Great Britain: Heinemann International Literature & Textbooks.
- Brown, A. & Bimrose, J., (2002). Using web-based tools for employee skills self-assessment and practitioner professional development. In *European Conference on Educational Research*. Symposium Researching Networked Collaborative Learning. Lisbon: University of Lisbon. Available at:

<http://www.leeds.ac.uk/educol/documents/00002327.htm> [Accessed May 27 2009].

- Brown, J.S., Collins, A. & Duguid, P., (1989). Situated cognition and the culture of learning. *Educational researcher*, 18(1), p.32.
- Bruner, J., (1985). Vygotsky: A historical and conceptual perspective. In Wertsch, J. V., (ed.), *Culture, communication, and cognition: Vygotskian perspectives*. USA: Cambridge University Press, pp. 21-34.
- Brydon-Miller, M., (2008). Ethics and action research: Deepening our commitment to principles of social justice and redefining systems of democratic practice. In Reason P. & Bradbury, H., (eds.), *The Sage handbook of action research: Participative inquiry and practice*. London: SAGE Inc., pp. 199-210.
- Bryman, A., (2008). *Social Research Methods* 3rd ed., Oxford, UK: Oxford University Press.
- Carr, W. & Kemmis, S., (1986). *Becoming critical: Knowing through action research*, Australia: Deakin University.
- Carrington, E.W., (1993). The Future of Education in the Caribbean: Report of the CARICOM Advisory Task Force on Education. Available at: <http://eric.ed.gov/ERICWebPortal/recordDetail?accno=ED391241> [Accessed June 18, 2009].
- Carspecken, P.F., (1996). *Critical ethnography in educational research: a theoretical and practical guide*, New York: Routledge.
- Chatti, A., (2008). Mohamed Amine Chatti's ongoing research on Technology Enhanced Learning: LaaN vs. Social Constructivism. Available at: <http://mohamedaminechatti.blogspot.com/2008/09/connectivism-and-laan.html> [Accessed November 16, 2009].
- Checkland, P.B., (1999). *Systems Thinking, Systems Practice: includes a 30-year retrospective*, New York: John Wiley & Sons Ltd.
- Clough, P. & Nutbrown, C., (2007). *A student's guide to methodology: justifying enquiry*, London: Sage Publications Ltd.
- Cobb, P. & Bowers, J., (1999). Cognitive and situated learning perspectives in theory and practice. *Educational Researcher*, 28(2), p.4.
- Coble, A.G., (2000). The historical development of higher education in the Anglophone Caribbean. In G. D. Howe, ed. *Higher education in the Caribbean: Past, present and future directions*. Jamaica: The University of West Indies Press, pp. 1-23.
- Cohen, L., Manion, L. & Morrison, K., (2007). *Research methods in education* 6th ed., USA: Routledge.
- Cole, M., (1996). *Culture in mind*, USA: Harvard University Press.

- Cole, M. & Engeström, Y., (1993). A cultural-historical approach to distributed cognition. In *Distributed cognitions: Psychological and educational considerations*. pp. 1-46.
- Conceição, S., Desnoyers, C. & Baldor, M., (2008). Individual Construction Of Knowledge In An Online Community Through Concept Maps. In *Third Int. Conference on Concept Mapping*. Concept Mapping: Connecting Educators. Helsinki. Available at: <http://cmc.ihmc.us/cmc2008papers/cmc2008-p024.pdf> [Accessed April 6 2009].
- Conole, G., (2010). An overview of design representations. In *Proceedings of the 7th International Conference of Networked Learning*. Networked Learning Conference 2010. Denmark: Aalborg university, pp. 482–489.
- Conole, G., (2008). The role of mediating artefacts in learning design. *Handbook of research on learning design and learning objects: Issues, applications and technologies*, pp.188-208.
- Conole, G. & Culver, J., (2010). The design of Cloudworks: Applying social networking practice to foster the exchange of learning and teaching ideas and designs. *Computers & Education*, 54(3), pp.679-692.
- Conole, G., Culver, J., Williams, P., Cross, S., Clark, P., & Brasher, A. (2009). Cloudworks: Social networking for learning design. *Australasian Journal of Educational Technology*, 25(5), 763-782.
- Conole, G. & Fill, K., (2005). A learning design toolkit to create pedagogically effective learning activities. *Journal of Interactive Media in Education*, 34(1).
- Conole, G., McAndrew, P. & Dimitriadis, Y., (2010). The role of CSCL pedagogical patterns as mediating artefacts for repurposing Open Educational Resources. In Pozzi, F. & Persico, D., (Eds.), *Techniques for Fostering Collaboration in Online Learning Communities: Theoretical and Practical*. United Kingdom: Information Science Reference, pp. 206-223.
- Conole, G. & Oliver, M., (2007). *Contemporary Perspectives in E-learning Research (Open & Flexible Learning)* 1st ed., USA: Routledge.
- Conole, G., (2009). Stepping over the edge: the implications of new technologies for education. In *Web 2.0-Based E-Learning: Applying Social Informatics for Tertiary Teaching*. USA: Information Science Publishing. Available at: <http://oro.open.ac.uk/13175/> [Accessed November 16, 2010].
- Coombs, P.H. & Ahmed, M., (1974). *Attacking rural poverty: How nonformal education can help*, USA: The Johns Hopkins University Press.
- Corbin, J.M. & Strauss, A.C., (2008). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* 3rd Edition., USA: Sage Publications, Inc.

- Cordingley, P. et al., (2003). *The impact of collaborative Continuing Professional Development (CPD) on classroom teaching and learning*, EPPI Review. Available online at: <http://eppi.ioe.ac.uk/EPPIWeb/home.aspx> [Accessed May 27 2009].
- Corey, S.M., (1953). *Action research to improve school practices*, Bureau of Publications, Teachers College, Columbia University, New York.
- Coverdale, A., Hill, L. & Sissons, T., (2011). Using Social Media in Academic Practice: A Student-led Training Initiative. *Compass: The Journal of Learning and Teaching at the University of Greenwich*, 1(3), pp.37-45.
- Creswell, J.W., (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* Third Edition., USA: Sage Publications, Inc.
- Crook, C., (1998). Children as computer users: The case of collaborative learning. *Computers & Education*, 30(3-4), pp.237-247.
- Crook, C., (1996). *Computers and the collaborative experience of learning*, London: Routledge.
- Crook, C.K. and Lewthwaite, S., (2010). Technologies for formal and informal learning. In: Littleton, K., Wood, C., Staarman, J.K., eds. *International Handbook of Psychology in Education*. Emerald, pp. 435-461.
- Cunningham, J.B., (1993). *Action research and organizational development*, USA: Praeger Publishers.
- Cutroni, J., (2007). *Google Analytics*, USA: O'Reilly Media, Inc.
- Danaher, P. & Abdurrahman, U. eds., (2010). *Teacher Education through Open and Distance Learning*, Canada: Commonwealth of Learning. Available at: <http://www.icde.org/?module=Files;action=File.getFile;ID=1196> [Accessed May 1, 2011].
- Daniels, H., Cole, M. & Wertsch, J.V., (2007). *The Cambridge Companion to Vygotsky*, USA: Cambridge University Press.
- Daniels, Harry, (2004). Cultural historical activity theory and professional learning. *International Journal of Disability, Development and Education*, 51(2), p.185. Available at: <http://www.informaworld.com/10.1080/10349120410001687391> [Accessed June 8, 2011].
- Davis, J.M., (2007). Rethinking the architecture: An action researcher's resolution to writing and presenting their thesis. *Action Research*, 5(2), pp.181-198. Available at: <http://arj.sagepub.com/cgi/content/abstract/5/2/181> [Accessed March 31, 2010].
- Derrida, J., (1998). *Of grammatology*, USA: JHU Press (Original work published in 1967).

- Dewey, J., (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*, USA: DC Heath Boston.
- Dick, B., (2000). A Beginners' guide to action research. Available at: <http://www.scu.edu.au/schools/qcm/ar/arp/guide.html> [Accessed November 24, 2009].
- Dickens, L. & Watkins, K., (1999). Action research: rethinking Lewin. *Management Learning*, 30(2), p.127.
- Dillenbourg, P., (1999). What do you mean by collaborative learning? In Dillenbourg, P., (Ed.), *Collaborative learning: Cognitive and computational approaches*. Oxford, UK: Elsevier, pp. 1-19.
- Dillenbourg, P., Baker, M., Blaye, A. & O'Malley, C. (1996). The evolution of research on collaborative learning. In Spada, E. & Reiman, P., (Eds.), *Learning in Humans and Machine: Towards an interdisciplinary learning science*, Oxford: Elsevier, pp. 189-211.
- Downes, S., (2005). E-learning 2.0. *ELearn Magazine*, 2005 (10). Available at: <http://www.elearnmag.org/subpage.cfm?article=29-1§ion=articles> [Accessed August 6, 2010].
- Downes, S., (2007). What Connectivism Is. Available at: <http://www.downes.ca/post/38653> [Accessed November 12, 2009].
- Duffy, T.M. & Cunningham, D.J., (1996). Constructivism: Implications for the design and delivery of instruction. In Jonassen, D.H., (Ed), *Handbook of research for educational communications and technology*. New York: Macmillan, pp. 170-198.
- Durrant, J., (2003). *Teachers leading learning*, United Kingdom: Leeds University.
- Dyke, M., Conole, G., Ravenscroft, A., & De Freitas, S. (2007). Learning theory and its application to e-learning. In Conole, G. & Oliver, M. (Eds.), *Contemporary perspectives in e-learning research: Themes, methods and impact on practice*. USA: Routledge, pp. 82-97.
- Eaton, P. & Carbone, R.E., (2008). Asking those who know: a collaborative approach to continuing professional development. *Teacher Development*, 12(3), pp.261-270.
- Ehn, P., (1993). Scandinavian design: On participation and skill. In Schuler, D., (Ed.), *Participatory Design: Principles and Practices*. USA: Lawrence Erlbaum, pp. 41-77.
- Ehn, P. & Sandberg, Å., (1979). God Utredning [Good Investigation]. *Utredning och forndring i forvaltningen*. Stockholm: Liber.
- Eikeland, O., (2001). Action research as the hidden curriculum of the western tradition. *Handbook of action research: Participative inquiry and practice*, pp.145-155.

- Engeström, R., (1995). Voice as communicative action. *Mind, Culture, and Activity*, 2(3), p.192. Available at: <http://www.informaworld.com/10.1080/10749039509524699> [Accessed June 8, 2011].
- Engeström, Y., (1999). Activity theory and individual and social transformation. In *Perspectives on activity theory*. USA: Cambridge University Press, pp. 19-38.
- Engeström, Y., (1993). Developmental studies of work as a test bench of activity theory: The case of primary care medical practice. In *Understanding practice: Perspectives on activity and context*. pp. 64-103.
- Engeström, Y., (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of education and work*, 14(1), pp.133-156.
- Engeström, Y., (2000). From individual action to collective activity and back: Developmental work research as an interventionist methodology. In *Workplace Studies: recovering workplace and informing system design*. United Kingdom: Cambridge University Press, pp. 150-166.
- Engeström, Y., (1987). *Learning by expanding: An activity-theoretical approach to developmental research*, Helsinki: Orienta-Konsultit Oy.
<http://lchc.ucsd.edu/mca/Paper/Engestrom/expanding/toc.htm>
[Accessed December 14 2010]
- Engeström, Y. & Sannino, A., (2010). Studies of expansive learning: Foundations, findings and future challenges. *Educational Research Review*, 5(1), p.1-24.
- Engeström, Y., (2004). New forms of learning in co-configuration work. *Journal of Workplace Learning*, 16(1/2), pp.11-21. Available at: <http://www.emeraldinsight.com/journals.htm?issn=1366-5626&volume=16&issue=1/2&articleid=882307&show=html&PHPSESSID=9a91oiuqudidq1rioig9pe3js7> [Accessed June 8, 2011].
- Engeström, Y., (2000). Activity theory as a framework for analyzing and redesigning work. *Ergonomics*, 43(7), p.960-974.
- Engestrom, Y. & Miettinen, R., (1999). Activity theory: A well-kept secret. In Engeström, Y. Miettinen, R. & Punamäki, R.-L. (Eds.), *Perspectives on activity theory*. UK: Cambridge University Press, pp. 1-17.
- Eraut, M., (2000). Non-formal learning, implicit learning and tacit knowledge in professional work. *The necessity of informal learning*, pp.12-31.
- Fairclough, N., (1993). *Discourse and social change*, United Kingdom: Polity Press.
- Feldman, A., (2002). Existential approaches to action research. *Educational Action Research*, 10(2), pp.233-252.
- Fergus, H.A., (2003). *A history of education in the British Leeward Islands, 1838-1945*, Jamaica: University of the West Indies Press.

- Fischer, G., (2009). End-user development and meta-design: Foundations for cultures of participation. *End-User Development*, pp.3–14.
- Fischer, G. & Giaccardi, E., (2006). Meta-design: A framework for the future of end-user development. *End user development*, pp.427–457.
- Fisher, T., (2003). Teacher professional development through curriculum development: teachers' experiences in the field trialling of on-line curriculum materials. *Technology, Pedagogy and Education*, 12(3), pp.329 - 343.
- Floyd, C., Mehl, W. M., Reisin, F. M., Schmidt, G., & Wolf, G. (1989). Out of Scandinavia: Alternative approaches to software design and system development. *Human-Computer Interaction*, 4(4), 253-350.
- Foth, M., (2006). Network Action Research. *Action Research*, 4(2), pp.205-226. Available at: <http://arj.sagepub.com/cgi/content/abstract/4/2/205> [Accessed 20:52:40].
- Foth, M. & Axup, J., (2006). Participatory design and action research: Identical twins or synergetic pair. In *Participatory Design Conference*. Expanding Boundaries in Design. Trento, Italy, pp. 93-96. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.91.6342&rep=rep1&type=pdf> [Accessed November 3, 2009].
- Foucault, M., (2002). *The order of things*, London: Routledge (original work published in 1966).
- Freire, P., (2000). *Pedagogy of the oppressed*, New York: Continuum International Publishing Group.
- Frideres, J.S., (1992). Participatory research: an illusionary perspective. In Frideres, J. (Ed.), *World of communities: Participatory research perspectives*. Canada: Captus Press, pp. 1–13.
- Göncü, A., (1993). Development of Intersubjectivity in Social Pretend Play. *Human Development*, 36(4), pp.185-198. Available at: <http://content.karger.com/ProdukteDB/produkte.asp?doi=10.1159/000278206> [Accessed June 5, 2011].
- Garrick, J., (1998). *Informal Learning in the Workplace: Unmasking Human Resource Development*, United Kingdom: Routledge.
- Garrison, D. R., (1997). Computer Conferencing: The Post-Industrial Age of Distance Education. *Open learning*, 12(2), pp.3-11.
- Garrison, D. R., Anderson, T. & Archer, W., (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2-3), pp.87-105.

- Garrison, D. R., Anderson, T. & Archer, W., (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of Distance Education*, 15(1), pp.7-23.
- Garrison, D. Randy, Anderson, Terry & Archer, Walter, (2010). The first decade of the community of inquiry framework: A retrospective. *The Internet and Higher Education*, 13(1-2), pp.5-9. Available at: <http://www.sciencedirect.com/science/article/B6W4X-4XJG5S1-1/2/da71fb82ddea048d26acc017b5f78d7c> [Accessed March 2, 2010].
- Garrison, D. Randy & Arbaugh, J.B., (2007). Researching the community of inquiry framework: Review, issues, and future directions. *The Internet and Higher Education*, 10(3), pp.157-172. Available at: <http://www.sciencedirect.com/science/article/B6W4X-4P429GC-3/2/c2d5772730566950fbd128ac8a7934f1> [Accessed September 20, 2009].
- Gettier, E.L., (1963). Is justified true belief knowledge? *Analysis*, 23(6), p.121-123.
- Gokhale, A.A., (1995). Collaborative learning enhances critical thinking. *Journal of Technology Education*, 7, pp.22-30.
- Goodyear, P., (2002). Psychological foundations for networked learning. In Steeples, C. & C. Jones, (Eds.), *Networked learning: Perspectives and issues*. London: Springer, pp. 49-75.
- Greenhow, C. & Belbas, B., (2007). Using activity-oriented design methods to study collaborative knowledge-building in e-learning courses within higher education. *International Journal of Computer-Supported Collaborative Learning*, 2(4), pp.363-391. Available at: <http://www.springerlink.com/index/10.1007/s11412-007-9023-3> [Accessed March 14, 2010].
- Grundy, S. & Kemmis, S., (1982). Educational action research in Australia: the state of the art (an overview). *The action research reader*, pp.83-97.
- Gunawardena, C.N., Lowe, C.A. & Anderson, T., (1998). Analysis of a global online debate and the development of an interaction analysis model for examining social construction of knowledge in computer conferencing. *Journal of educational computing research*, 17(4).
- Guskey, T.R. & Huberman, M., (1995). *Professional Development in Education: New Paradigms and Practices*. New York: Teachers College Press.
- Guskey, T.R., (2002). Professional Development and Teacher Change. *Teachers and Teaching*, 8(3), pp.381-391.
- Hammersley, M., (1987). Some notes on the terms "validity" and "reliability." *British Educational Research Journal*, 13(1), p.73-82.
- Hansen, M.T., Nohria, N. & Tierney, T., (2005). What's your strategy for managing knowledge? *Knowledge management: critical perspectives on business and management*, 77(2), p.322.

- Hardman, J., (2005). Activity theory as a potential framework for technology research in an unequal terrain. *South African Journal of Higher Education*, 19(2), pp.258-265.
- Hargreaves, A., (2000). Four Ages of Professionalism and Professional Learning. *Teachers and Teaching*, 6(2), pp.151-182.
- Harré, R., (1984). *Personal being: A theory for individual psychology*, USA: Harvard University Press.
- Hart, J., (2009). Social Media FOR learning - Part 2 - Social Media for Working & Learning. *Social Media FOR learning - Part 2*. Available at: <http://janeknight.typepad.com/socialmedia/2009/11/social-media-for-learning-part-2.html> [Accessed July 4, 2010].
- Hasan, L., Morris, A. & Probets, S., (2009). Using Google Analytics to Evaluate the Usability of E-Commerce Sites. In *Human Centered Design*. pp. 697-706. Available at: http://dx.doi.org/10.1007/978-3-642-02806-9_81 [Accessed July 15, 2010].
- Hedegaard, M., (2009). Children's Development from a Cultural-Historical Approach: Children's Activity in Everyday Local Settings as Foundation for Their Development. *Mind, Culture, and Activity*, 16(1), pp.64-82.
- Hedegaard, M., (1998). Situated learning and cognition: Theoretical learning and cognition. *Mind, Culture, and Activity*, 5(2), pp.114-126.
- Heer, J. & Boyd, D., (2005). Vizster: Visualizing online social networks. In *INFOVIS 2005*. IEEE Symposium on Information Visualization. Minneapolis, Minnesota, pp. 32-39. Available at: <http://www.danah.org/papers/InfoViz2005.pdf> [Accessed February 6, 2011].
- Henri, F., (1992). Computer conferencing and content analysis. In Kaye, A. (Ed.), *Collaborative learning through computer conferencing: The Najaden papers*. Berlin: Springer, pp. 117-136.
- Herr, K.G. & Anderson, G.L., (2005). *The Action Research Dissertation: A Guide for Students and Faculty* 1st ed., United Kingdom: Sage Publications, Inc.
- Hiebert, J., (1992). Reflection and communication: Cognitive considerations in school mathematics reform. *International Journal of Educational Research*, 17(5), pp.439-456. Available at: <http://www.sciencedirect.com/science/article/B6VDF-4GP1TWP-4/2/2d2a581239f0ce1783272b33076e8e54> [Accessed 22:42:05].
- Hollan, J., Hutchins, E. & Kirsh, D., (2000). Distributed cognition: toward a new foundation for human-computer interaction research. *ACM Trans. Comput.-Hum. Interact.*, 7(2), pp.174-196. Available at: <http://portal.acm.org/citation.cfm?id=353485.353487&dl=GUIDE&dl=ACM&idx=353485&part=period...> [Accessed August 8, 2010].

- Hull, D.M. & Saxon, T.F., (2009). Negotiation of meaning and co-construction of knowledge: An experimental analysis of asynchronous online instruction. *Computers & Education*, 52(3), pp.624-639.
- Hung, D.W.L. & Der-Thanq, C., (2001). Situated cognition, Vygotskian thought and learning from the communities of practice perspective: Implications for the design of web-based e-learning. *Educational Media International*, 38(1), pp.3-12.
- Illich, I., (1971). *Deschooling society*, New York: Harper & Row.
- Ilyenkov, É.V., (1977). *Dialectical logic: essays on its history and theory*, Moscow: Progress Publishers. Available at: <http://www.marxists.org/archive/ilyenkov/works/essays/dialectical-logic.pdf>. [Accessed February 24 2011]
- Ingram, A.L. & Hathorn, L.G., (2004). Methods for analyzing collaboration in online communications. In Roberts, T., (Ed.), *Online collaborative learning: Theory and practice*. USA: Information Science Publishing, pp. 215-241.
- Jarche, H., (2009). Social media and self-directed learning. *Social media and self-directed learning*. Available at: <http://www.jarche.com/2009/11/social-media-and-self-directed-learning/> [Accessed July 4, 2010].
- Jennings, Z., (2001). Teacher Education in Selected Countries in the Commonwealth Caribbean: The ideal of policy versus the reality of practice. *Comparative Education*, 37(1), p.107. Available at: <http://www.informaworld.com/10.1080/03050060020020453> [Accessed May 1, 2011].
- Johnson, C.M., (2001). A survey of current research on online communities of practice. *The Internet and Higher Education*, 4(1), pp.45-60.
- Johnson, M., 2008. Expanding the concept of Networked Learning. In *The 6th International Conference on Networked Learning*. Halkidiki, Greece. Available at: <http://www.networkedlearningconference.org.uk/past/nlc2008/abstracts/Johnson.htm> [Accessed May 10, 2010].
- Jones, C., & Esnault, L. (2004). The metaphor of networks in learning: communities, collaboration and practice. In Banks, S., Goodyear, P., Hodgson, V., Jones, C., Lally, V. McConnell, D., & Steeples C. (Eds.), *Networked learning 2004. Proceedings of the Fourth International Conference on Networked Learning 2004*. Lancaster: Lancaster University and University of Sheffield pp 317-323. <http://hal.archives-ouvertes.fr/docs/00/19/02/80/PDF/Jones-Chris-2004b.pdf> [Accessed December 14, 2010].

- Jones, R.A., (1994). The Ethics of Research in Cyberspace. *Internet Research*, 4(3), pp.30-35. Available at:
<http://www.emeraldinsight.com/journals.htm?issn=1066-2243&volume=4&issue=3&articleid=1509303&show=html&PHPSESSID=cte29fu0gncsrkdb5pqjco93k2> [Accessed January 31, 2011].
- Joyes, G., (2006). An activity theory approach to the exploration of tutors' perceptions of effective online pedagogy. In *Proceedings of the 23 rd annual ASCILITE conference: Who's learning? Whose technology*. pp. 401–408.
- Joyes, G., (2008). Challenging online learner identity through online learning tools. In H. W. are you in the landscape of educational technology?, ed. Hello! Where are you in the landscape of educational technology? Proceedings Ascilite Melbourne 2008. Burwood, Australia: Ascilite, pp. 466-473. Available at:
<http://www.ascilite.org.au/conferences/melbourne08/procs/joyes.pdf> [Accessed May 27, 2009].
- Kamler, B. & Thomson, P., (2006). *Helping Doctoral Students Write: Pedagogies for Doctoral Supervision* 1st ed., USA: Routledge.
- Kanuka, H. & Anderson, T., (1998). Online social interchange, discord, and knowledge construction. *Journal of Distance Education*, 13(1). Available at:
<http://www.jofde.ca/index.php/jde/article/viewArticle/137> [Accessed April 6, 2009]
- Kaptelinin, V. & Nardi, B.A., (2006). *Acting with Technology: Activity Theory and Interaction Design*, USA: MIT Press.
- Kaptelinin, V., 1994. Activity Theory: Implications for Human Computer Interaction. *Nato asi series of computer and systems sciences*, 129, pp.5-5.
- Kaptelinin, V., (1996). Distribution of cognition between minds and artefacts: augmentation of mediation? *AI & Society*, 10(1), pp.15-25.
- Kemmis, S., (1985). Action research and the politics of reflection. *Reflection: Turning experience into learning*, pp.139-163.
- Kemmis, S., (2001). Exploring the relevance of critical theory for action research: Emancipatory action research in the footsteps of Jürgen Habermas. *Handbook of action research: Participative inquiry and practice*, pp.91–102.
- Kemmis, S. & McTaggart, R., (1988). *The Action Research Planner*, Australia: Deakin university press.
- Kerlinger, F.N., (1964). *Foundations of behavioural research: Educational and psychological inquiry*, New York: Holt, Rinehart and Winston, Inc.,
- Kerr, B., (2006a). A challenge to connectivism. *Bill Kerr: a challenge to connectivism*. Available at:
<http://billkerr2.blogspot.com/2006/12/challenge-to-connectivism.html> [Accessed November 12, 2009].

- Kerr, B., (2006b). The network is not god. *Bill Kerr: the network is not god*. Available at: <http://billkerr2.blogspot.com/2006/10/network-is-not-god.html> [Accessed November 12, 2009].
- Kirk, J. & Miller, M.L., (1986). *Reliability and validity in qualitative research*, United Kingdom: Sage Publications, Inc.
- Knight, F.W., (1990). *The Caribbean: The Genesis of a Fragmented Nationalism* 2nd ed., USA: Oxford University Press.
- Knight, F.W. & Palmer, C.A., (1989). *The Modern Caribbean*, USA: The University of North Carolina Press.
- Knight, P., (2002). A systemic approach to professional development: learning as practice. *Teaching and teacher education*, 18(3), p.229–241.
- Kop, R. & Hill, A., (2008). Connectivism: Learning theory of the future or vestige of the past? *International Review of Research in Open and Distance Learning*, 9(3). Available at: <http://www.irrodl.org/index.php/irrodl/article/viewArticle/523/1103> [Accessed May 26 2009]
- Koschmann, T., (2002). Dewey's contribution to the foundations of CSCL research. In *Proceedings of the Conference on Computer Support for Collaborative Learning: Foundations for a CSCL Community*. International Society of the Learning Sciences, pp. 17-22.
- Koschmann, T.D. (Ed.), (1996). *CSCL, theory and practice of an emerging paradigm*, USA: Lawrence Erlbaum.
- Krippendorff, K., (2004). *Content analysis: An introduction to its methodology*, USA: Sage Publications, Inc.
- Latour, B., (1987). *Science in action: How to follow scientists and engineers through society*, USA: Harvard University Press.
- Laurillard, D., (2000). A conversational framework for individual learning applied to the learning organisation and the learning society. *Systems Research and Behavioral Science*, 16(2), pp.113-122.
- Lave, J. & Wenger, E., (1991). *Situated Learning: Legitimate Peripheral Participation* 1st ed., USA: Cambridge University Press.
- Leach, J. & Moon, B., (2000). Pedagogy, information and communications technology and teachers' professional knowledge. *Curriculum Journal*, 11(3), p.385. Available at: <http://www.informaworld.com/10.1080/09585170050200585> [Accessed May 9, 2011].
- Lehner, P.N., (1998). *Handbook of Ethological Methods*, USA: Cambridge University Press.

- Lehrer, K. & Paxson, T., (1969). Knowledge: undefeated justified true belief. *The Journal of Philosophy*, 66(8), p.225-237.
- Leont'ev, A.N., (1978). *Activity, consciousness, and personality*, USA: Prentice-Hall.
- Lester, S., (1999). Professional bodies, CPD and informal learning: the case of conservation. *Continuing Professional Development*, 2 (4), pp.110-121.
- Lewin, K., (1948). *Resolving social conflicts*, New York: Harper & Row.
- Lewis, R., (2003). An Activity Theory framework to explore distributed communities. *Journal of Computer Assisted Learning*, 13(4), pp.210-218.
- Lieberman, A., (1996). Creating Intentional Learning Communities. *Educational Leadership*, 54(3), pp.51-55.
- Lincoln, Y. & Guba, E., (1985). *Naturalistic inquiry*, USA: SAGE.
- Lincoln, Y. & Guba, E., (2005). Paradigmatic controversies, contradictions, and emerging confluences. In Denzin N. & Lincoln, Y. (Eds.), *The Sage Handbook of Qualitative Research*. London: Sage, pp. 191-215.
- Lisewski, B. & Joyce, P., (2003). Examining the five-stage e-moderating model: designed and emergent practice in the learning technology profession. *ALT-J*, 11(1), pp.55-66.
- Livingstone, D., (2001). *Adults' informal learning: Definitions, findings, gaps and future research*, Canada: University of Toronto.
- Lockyer, L., Bennett, S., Agostinho, S., & Harper, B. (Eds.). (2009). *Handbook of research on learning design and learning objects: Issues, applications and technologies*, New York: IGI Global.
- Loveless, A., DeVoogd, G. & Bohlin, R., 2001. Something old, something new... Is pedagogy affected by ICT. *ICT, pedagogy and the curriculum: subject to change*, pp.63-83.
- Loveless, Avril, Burton, J. & Turvey, K., (2006). Developing conceptual frameworks for creativity, ICT and teacher education. *Thinking Skills and Creativity*, 1(1), pp.3-13.
- MacDonald, J., (2006). *Blended learning and online tutoring: a good practice guide*, United Kingdom: Gower Publishing Ltd.
- Mann, C. & Stewart, F., (2000). *Internet communication and qualitative research: A handbook for researching online*, London: Sage Publications Ltd.
- Marsick, V.J. & Watkins, K.E., (2001). Informal and incidental learning. *New directions for adult and continuing education*, 2001(89), p.25.

- Marx, R. W., Blumenfeld, P. C., Krajcik, J. S., & Soloway, E. (1998). New technologies for teacher professional development. *Teaching and Teacher Education*, 14(1), pp.33-52.
- Mason, R. & Rennie, F., (2008). *E-learning and Social Networking Handbook: Resources for Higher Education*, New York: Routledge.
- McCaleb, S.P., (1997). *Building Communities of Learners*, USA: Lawrence Erlbaum.
- McConnell, D., (2000). *Implementing computer supported cooperative learning*, United Kingdom: Routledge.
- McCutcheon, G. & Jung, B., 1990. Alternative perspectives on action research. *Theory into practice*, 29(3), pp.144-151.
- McDonald, J., Collins, P., Hingst, R. D., Kimmins, L., Lynch, B., & Star, C. (2008). Community learning: member's stories about their academic community of practice. In *HERDSA 2008 International Conference*. Engaging Communities. Rotorua, New Zealand. University of Southern Queensland.
- McLean, J.E., (1995). *Improving education through action research: a guide for administrators and teachers*, Thousand Oaks, CA: Corwin Press.
- McLoughlin, C., (1999). Culturally responsive technology use: Developing an on-line community of learners. *British Journal of Educational Technology*, 30(3), pp.231-243.
- McLure Wasko, M. & Faraj, S., (2000). "It is what one does": why people participate and help others in electronic communities of practice. *Journal of strategic information systems*, 9(2-3), pp.155-173.
- McNiff, J., (1992). *Action research: Principles and practice*, Great Britain: Routledge.
- McNiff, J. & Whitehead, J., (2006). *All you need to know about action research*, Great Britain: Sage.
- McNiff, J. & Whitehead, J., (2009). *Doing and writing action research*, Great Britain: SAGE.
- McTaggart, R., (1997). *Participatory action research: International contexts and consequences*, New York: State University of New York Press.
- Melber, L.M. & Cox-Petersen, A.M., (2005). Teacher Professional Development and Informal Learning Environments: Investigating Partnerships and Possibilities. *Journal of Science Teacher Education*, 16(2), pp.103-120. Available at: <http://dx.doi.org/10.1007/s10972-005-2652-3> [Accessed March 2, 2010].
- Mezirow, J., (1985). A critical theory of self-directed learning. *New Directions for Adult and Continuing Education*, 1985(25), pp.17-30.

- Miettinen, R., (1999). The riddle of things: activity theory and actor-network theory as approaches to studying innovations. *Mind, Culture, and Activity*, 6(3), pp.170-195.
- Miettinen, R. & Hasu, M., (2002). Articulating user needs in collaborative design: Towards an activity-theoretical approach. *Computer Supported Cooperative Work (CSCW)*, 11(1), pp.129-151.
- Miller, E., (1999). Teacher Development in The Caribbean. In *Economic Development Institute (EDI)*. Trinidad & Tobago, p. 36. Available at: <http://www.oecs.org/oeru/documents/Teacher%20Dev.%20Final.pdf> [Accessed June 18 2009]
- Miller, E., (1993). Erdiston College: The Way Forward. *Barbados: Erdiston College*.
- Moon, J.A., (1999). *Reflection in learning and professional development: Theory and practice*, Great Britain: Routledge.
- Moule, P., (2007). Challenging the five-stage model for e-learning: a new approach. *ALT-J*, 15(1), pp.37-50.
- Mwanza, D., (2002). *Towards an Activity-Oriented Design Method for HCI Research and Practice*. PhD Thesis. United Kingdom. The Open University.
- Mwanza, D. & Engeström, Y., (2005). Managing content in e-learning environments. *British Journal of Educational Technology*, 36(3), pp.453-463.
- Mwanza-Simwami, D., (2009). Using activity-oriented design methods (AODM) to investigate mobile learning. In Vavoula, G., Pachler, N. & Kukulska-Hulme, A. (Eds.), *Researching Mobile Learning Frameworks, tools and research designs*. Oxford, UK: Peter Lang, pp. 97-122.
- Nardi, B.A., (1996). *Context and consciousness: activity theory and human-computer interaction*, MIT Press.
- Neuman, W., (1997). Social research methods: qualitative and quantitative approaches Allyn and Bacon. *Needham Heights, USA*.
- Newman, D.R. et al., (1997). Evaluating the quality of learning in computer supported co-operative learning. *Journal of the American Society for Information Science*, 48(6), pp.484-495. Available at: [http://onlinelibrary.wiley.com/doi/10.1002/\(SICI\)1097-4571\(199706\)48:6%3C484::AID-ASI2%3E3.0.CO;2-Q/abstract](http://onlinelibrary.wiley.com/doi/10.1002/(SICI)1097-4571(199706)48:6%3C484::AID-ASI2%3E3.0.CO;2-Q/abstract) [Accessed October 1, 2010].
- Newman, D., Griffin, P. & Cole, Michael, (1989). *The construction zone: working for cognitive change in school*, USA: Cambridge University Press.
- Noffke, S.E., Brennan, M. & Gitlin, A., (1997). Professional, personal, and political dimensions of action research. *Review of research in education*, 22(1), pp.305-343.

- O'Reilly, T., (2007). What is Web 2.0: Design patterns and business models for the next generation of software. *Communications & Strategies*, 65(1), pp.17-37.
- Paavola, S., Lipponen, L. & Hakkarainen, K., (2004). Models of innovative knowledge communities and three metaphors of learning. *Review of Educational Research*, 74(4), p.557.
- Palloff, R.M. & Pratt, K., (1999). *Building learning communities in cyberspace*, California, USA: Jossey-Bass Publishers.
- Palloff, R.M. & Pratt, K., (2007). *Building online learning communities: Effective strategies for the virtual classroom*, California, USA: Jossey-Bass Inc Pub.
- Park, P., (2001). Knowledge and participatory research. *Handbook of action research: Participative inquiry and practice*, pp.81-90.
- Parrott, M. & Riding, P., (2003). Building an international on-line teacher community to support continuing professional development. In *Computers in Education, 2002. Proceedings. International Conference on*. IEEE, pp. 1122-1123.
- Pask, G., (1976). Conversation theory: Applications in education and epistemology.
- Peters, M. & Robinson, V., (1984). The Origins and Status of Action Research. *Journal of Applied Behavioral Science*, 20(2), pp.113-124. Available at: <http://jab.sagepub.com/cgi/content/abstract/20/2/113> [Accessed November 27, 2009].
- Plaza, B., (2010). Google Analytics for measuring website performance. *Tourism Management*, In Press, Corrected Proof. Available at: <http://www.sciencedirect.com/science/article/B6V9R-4YYVCH8-1/2/e307f38ed5535644d371b6bde3f13ad6> [Accessed July 15, 2010].
- Polanyi, M., (1958). *Personal knowledge: Towards a post-critical philosophy*, Great Britain: Routledge.
- Putnam, R.T. & Borko, H., (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational researcher*, 29(1), p.4-15.
- Raelin, J., (2009). Seeking conceptual clarity in the action modalities. *Action Learning Research and Practice*, 6(1), pp.17-24.)
- Reason, P., (2003). Pragmatist philosophy and action research: Readings and conversation with Richard Rorty. *Action Research*, 1(1), p.103.
- Reason, Peter & Bradbury, H., (2001). *Handbook of action research: participative inquiry and practice*, Great Britain: SAGE.
- Reason, Peter & Bradbury, Hilary, (2008). *The Sage handbook of action research: participative inquiry and practice*, SAGE.

- Reigeluth, C.M., (1999). What is instructional-design theory and how is it changing. In C. M. Reigeluth, ed. *Instructional-design theories and models*. pp. 5-29.
- Richardson, L., (2003). Writing: A method of inquiry. *Turning points in qualitative research: tying knots in a handkerchief*, pp.379–396.
- Richardson, L. & St. Pierre, E.A., (2005). Writing: A method of inquiry. In Denzin, N.K. & Lincoln, Y. S. (Eds.), *The Sage Handbook of Qualitative Research*. London: Sage, pp. 959-978.
- Robinson, B. & Latchem, C.R. eds., (2003). *Teacher education through open and distance learning*, Great Britain: RoutledgeFalmer.
- Rogoff, B., (1990). *Apprenticeship in thinking: Cognitive development in social context*, New York: Oxford University Press.
- Rogoff, B., (1995). Observing sociocultural activity on three planes: participatory appropriation, guided participation, and apprenticeship. In J. V. Wertsch, P. Del Rio, & A. Alvarez, eds. *Sociocultural Studies of Mind*. USA: Cambridge University Press, pp. 139-164.
- Rogoff, B., Matusov, E., & White, C. (1998). Models of teaching and learning: Participation in a community of learners. In Olson, D. R. & Torrance, N. (Eds.), *The handbook of education and human development: New models of learning, teaching and schooling*. Oxford: Blackwell Publishers, pp. 388-414.
- Rogonzinski, J., (2000). *A Brief History of the Caribbean: From the Arawak and Carib to the Present*, New York: Plume.
- Rorty, R., (1992). *The Linguistic Turn: Essays in Philosophical Method*, USA: University of Chicago Press.
- Roschelle, J., & Teasley, S. D. (1995). The Construction of Shared Knowledge in collaborative problem solving. In C. O'Malley (Ed.), *Computer-Supported Collaborative Learning* (pp. 67-97). Berlin: Springer-Verlag.
- Rose, A., (1992). Framing our experience: Research notes on reflective practice. *Adult Learning*, 3(4), p.5.
- Rosen, E., (2007). *The Culture of Collaboration* 1st ed., USA: Red Ape Publishing.
- Rourke, L., Anderson, T., Garrison, D. R., & Archer, W. (1999). Assessing social presence in asynchronous text-based computer conferencing. *Journal of distance education*, 14(2), pp.50-71.
- Rourke, L., Anderson, T., Garrison, D. R., & Archer, W. (2001). Methodological issues in the content analysis of computer conference transcripts. *International Journal of Artificial Intelligence in Education*, 12(1), pp.8-22.
- Rubin, V., (1960). *Caribbean Studies: a Symposium*, Seattle: University of Washington Press.

- Salmon, G., (2004). *E-Moderating: The Key to Teaching and Learning Online* 2nd ed., London: RoutledgeFalmer.
- Salomon, G., (1997). *Distributed cognitions*, USA: Cambridge University Press.
- Schön, D.A., (1983). *The reflective practitioner: how professionals think in action*, New York: Basic Books.
- Schellens, T. & Valcke, M., (2005). Collaborative learning in asynchronous discussion groups: What about the impact on cognitive processing? *Computers in Human Behavior*, 21(6), pp.957-975. Available at: <http://www.sciencedirect.com/science/article/B6VCJ-4G2BG31-1/2/959e306b482b3c10dbe80de5b171acef> [Accessed July 18, 2010].
- Schrire, S., (2006). Knowledge building in asynchronous discussion groups: Going beyond quantitative analysis. *Computers & Education*, 46(1), pp.49-70. Available at: <http://www.sciencedirect.com/science/article/B6VCJ-4G2BG31-1/2/959e306b482b3c10dbe80de5b171acef> [Accessed February 27, 2011].
- Schuler, D. & Namioka, A., (1993). *Participatory design: Principles and practices*, London: CRC / Lawrence Erlbaum.
- Seddon, K. & Postlethwaite, K., (2007). Creating and testing a model for tutors and participants to support the collaborative construction of knowledge online. *Technology, Pedagogy and Education*, 16(2), pp.177-198.
- Selwyn, N., (2007). Web 2.0 applications as alternative environments for informal learning-a critical review. In *paper presented at the CERI-KERIS International expert meeting on ICT and educational performance*. Cheju Island, South Korea: Organization for Economic Co-Operation and Development.
- Sewell, A.M., (2007). *Teachers and children learning together: developing a community of learners in a primary classroom*. PhD Thesis. New Zealand: Massey University. Available at: <http://muir.massey.ac.nz/handle/10179/240>. [Accessed February 9, 2011]
- Shannon, C.E. & Weaver, W., (1949). *A Mathematical Model of Communication*, Urbana, Illinois: University of Illinois Press.
- Sharratt, M. & Usoro, A., (2003). Understanding knowledge-sharing in online communities of practice. *Electronic Journal of Knowledge Management*, 1(2), pp.187-196.
- Shea, P., (2007). Towards a conceptual framework for learning in blended environments. *Blended Learning: Research Perspectives*, pp.19-36.
- Shea, P. et al., (2010). A re-examination of the community of inquiry framework: Social network and content analysis. *The Internet and Higher Education*, 13(1-2), pp.10-21.

- Shulman, L. & Shulman, J., (2004). How and what teachers learn: a shifting perspective. *Journal of Curriculum Studies*, 36(2), pp.271, 257.
- Siemens, G., (2005). Connectivism: A Learning Theory for the Digital Age. *International Journal of Instructional Technology and Distance Learning*, 2(1), pp.3-10.
- Silva, M. & Breuleux, A., (1994). The Use of Participatory Design in the Implementation of Internet-Based Collaborative Learning Activities in K-12 Classrooms. *Interpersonal Computing and Technology Journal*, 2(3), pp.99-128.
- Silverman, D., (2006). *Interpreting qualitative data: Methods for analyzing talk, text, and interaction*, Great Britain: Sage Publications Ltd.
- Singh, G., Hawkins, L. & Whymark, G., (2007). An integrated model of collaborative knowledge building. *Interdisciplinary Journal of Knowledge and Learning Objects*, 3, pp.85-105.
- Slater, M., (2011). Measuring Presence: A Response to the Witmer and Singer Presence Questionnaire. *Presence: Teleoperators and Virtual Environments*, 8(5), pp.560-565. Available at: <http://dx.doi.org/10.1162/105474699566477> [Accessed March 1, 2011].
- Smith, M., (2009). kurt Lewin: groups, experiential learning and action research. Available at: http://www.infed.org/images/illustrations/lewin_action_research.gif [Accessed April 29, 2011].
- Smith, P.L. & Ragan, T.J., (1999). *Instructional Design*, New York: Merrill.
- Snelbecker, G.E., (1974). *Learning theory, instructional theory, and psychoeducational design*, New York: McGraw-Hill.
- Solomon, D.L., (2000). Toward a post-modern agenda in instructional technology. *Educational Technology Research and Development*, 48(4), pp.5-20.
- Spears, L.C., (1995). *Reflections on leadership: How Robert K. Greenleaf's theory of servant-leadership influenced today's top management thinkers*, Australia: Wiley.
- Spector, J.M., (1995). Integrating and humanizing the process of automating instructional design. In Tennyson, R. & Barron, A. (Eds.), *Automating instructional design: computer-based development and delivery tools*. Berlin: Springer, pp. 523-523.
- Stahl, G., (2000). A Model of Collaborative Knowledge-Building. In B. Fishman & S. F. O'Connor-Divelbiss, eds. *Proceedings of ICLS 2000*. ICLS: Facing the Challenges of Complex Real-World Settings. Ann Arbor, Michigan: The University of Michigan, pp. 70-77. Available at: <http://www.umich.edu/~icls/proceedings/pdf/Stahl.pdf> [Accessed January 28, 2010].

- Stahl, G., (2006). *Group Cognition: Computer Support for Building Collaborative Knowledge*, Cambridge: MIT Press.
- Stahl, G., 2005. Group cognition in computer-assisted collaborative learning. *Journal of Computer Assisted Learning*, 21(2), pp.79-90.
- Stahl, G., Koschmann, T. & Suthers, D., (2006). Computer-Supported Collaborative Learning: An historical perspective. In *Cambridge handbook of the learning sciences*. UK: Cambridge University Press, pp. 406-427.
- Staudinger, U.M., (2001). Life Reflection: A Social-Cognitive Analysis of Life Review. *Review of General Psychology*, 5(2), pp.148-160. Available at: <http://www.sciencedirect.com/science/article/B6WYJ-46DSXSS-5/2/4930b5cc7d6e9de299f3bb0ef311a303> [Accessed 22:52:31].
- Steeple, Christine & Jones, Chris eds., (2002). *Networked learning: Perspectives and Issues*, Great Britain: Springer.
- Steinkuehler, C.A., (2004). Learning in massively multiplayer online games. In *Proceedings of the 6th international conference on Learning sciences*. Mahwah, NJ: Lawrence Erlbaum, pp. 521-528.
- Stenhouse, L., (1975). *An introduction to curriculum research and development*, London: Heinemann Educational Publishers.
- Steward, L. & Thomas, E., (1996). *Teacher education in the Commonwealth: Caribbean Issues and Developments*, London: Commonwealth Secretariat.
- Stringer, E., (2007). *Action Research* 3rd ed., UK: Sage Publications, Inc.
- Suthers, D., (2005). Technology affordances for intersubjective learning: a thematic agenda for CSCL. In *proceedings of the 2005 conference on Computer support for collaborative learning: learning 2005: the next 10 years!* CSCL 2005. International Society of the Learning Sciences, p. 662-671. Available at: <http://portal.acm.org/citation.cfm?id=1149293.1149380> [Accessed June 5, 2011].
- Van der Veer, R., (2007). Vygotsky in Context:1900-1935. In *The Cambridge Companion to Vygotsky*. New York: Cambridge University Press, pp. 21-49.
- Verenikina, I., (1998). Cultural-Historical Psychology and Activity Theory. In *Information systems and activity theory: tools in context*. Wollongong, Australia: University of Wollongong Press, pp. 7-18.
- Verhagen, P., (2006). Connectivism: A new learning theory. 2006,. Available at: <http://www.surfspace.nl/nl/Redactieomgeving/Publicaties/Documents/Connectivism%20a%20new%20theory.pdf> [Accessed August 8, 2010].
- Vlachopoulos, P. & Cowan, J., (2010). Reconceptualising moderation in asynchronous online discussions using grounded theory. *Distance Education*, 31(1), p.23. Available at:

<http://www.informaworld.com/10.1080/01587911003724611> [Accessed January 23, 2011].

- Vygotsky, L.S., (1978). *Mind and society: The development of higher mental processes*, Cambridge, MA: Harvard University Press.
- Vygotsky, L.S., (1964). Thought and language. *Annals of Dyslexia*, 14(1), pp.97-98.
- Waisberg, D. & Kaushik, A., (2009). Web Analytics 2.0: Empowering Customer Centricity. *The original Search Engine Marketing Journal*, 2(1), pp.5-11.
- Warmington, P. et al., (2004). Learning in and for interagency working: conceptual tensions in "joined up" practice. In *TLRP Conference*. Cardiff.
- Warschauer, M., (2004). *Technology and social inclusion: rethinking the digital divide*, USA: MIT Press.
- Watson, G., (2001). Models of information technology teacher professional development that engage with teachers' hearts and minds. *Technology, Pedagogy and Education*, 10(1), pp.179-190.
- Weber, R.P., (1990). *Basic Content Analysis (Quantitative Applications in the Social Sciences)*, United Kingdom: Sage Publications Ltd.
- Van Weert, T. J. (2006). Education of the twenty-first century: New professionalism in lifelong learning, knowledge development and knowledge sharing. *Education and Information Technologies*, 11(3), pp. 217-237.
- Weller, M., (2007). The distance from isolation:: Why communities are the logical conclusion in e-learning. *Computers & Education*, 49(2), pp. 148-159.
- Wellington, J., (2000). *Educational research: Contemporary issues and practical approaches*, Great Britain: Continuum Intl Pub Group.
- Wells, C.G., (1999). *Dialogic inquiry*, United Kingdom: Cambridge University Press.
- Wenger, E., (2003). Communities of practice and social learning systems. *Knowing in organizations: A Practice-based approach*, pp. 76-99.
- Wenger, E., (1999). *Communities of practice: Learning, meaning, and identity*, USA: Cambridge University Press.
- Wenger, E., McDermott, R.A. & Snyder, W., (2002). *Cultivating communities of practice: A guide to managing knowledge*, USA: Harvard Business Press.
- Wertsch, J.V., (1988). *Vygotsky and the social formation of mind*, USA: Harvard University Press.

- Wertsch, J.V., Del Rio, P. & Alvarez, A., (1995). Sociocultural studies: History, action, and mediation. In Wertsch, J.V., Del Rio, P. & Alvarez, A., (Eds.), *Sociocultural studies of mind*. pp. 1-34.
- Whitehead, J., (1989). Creating a Living Educational Theory from Questions of the Kind, "How Do I Improve My Practice?". *Cambridge Journal of Education*, 19(1), pp.41-52.
- Williams, E.E., (1970). *From Columbus to Castro: the History of the Caribbean, 1492-1969*, London: Deutsch.
- Willis, J., (1995). A Recursive, Reflective Instructional Design Model Based on Constructivist-Interpretivist Theory. *Educational Technology*, 35(6), pp.5-23.
- Willis, J., (2009). *Constructivist instructional design (C-ID)*, USA: Information Age Publishing.
- Wilson, B.G., (1996). *Constructivist Learning Environments: Case studies in Instructional Design*, USA: Educational Technology.
- Winter, G., (2000). A comparative discussion of the notion of validity in qualitative and quantitative research. *The qualitative report*, 4(3), p.4.
- Witmer, B.G. & Singer, M.J., (2011). Measuring Presence in Virtual Environments: A Presence Questionnaire. *Presence: Teleoperators and Virtual Environments*, 7(3), pp.225-240. Available at: <http://dx.doi.org/10.1162/105474698565686> [Accessed March 1, 2011].
- Wolcott, H.F., (2008). *Writing Up Qualitative Research* Third Edition., USA: Sage Publications, Inc.
- Wood, D., Bruner, J.S. & Ross, G., (1976). The Role of Tutoring in Problem Solving. *Journal of Child Psychology and Psychiatry*, 17(2), pp.89-100. Available at: <http://onlinelibrary.wiley.com/doi/10.1111/j.1469-7610.1976.tb00381.x/abstract> [Accessed January 27, 2011].
- Yamagata-Lynch, L. C. & Haudenschild, M.T., (2009). Using activity systems analysis to identify inner contradictions in teacher professional development. *Teaching and Teacher Education*, 25(3), pp.507-517.
- Yamagata-Lynch, Lisa C., (2010). *Activity Systems Analysis Methods: Understanding Complex Learning Environments*, New York: Springer.
- Zahorik, P. & Jenison, R.L., (2011). Presence as Being-in-the-World. *Presence: Teleoperators and Virtual Environments*, 7(1), pp.78-89. Available at: <http://dx.doi.org/10.1162/105474698565541> [Accessed March 1, 2011].
- Zuber-Skennitt, O., (1993). Improving learning and teaching through action learning and action research. *Higher Education Research & Development*, 12(1), pp.45-58.

Zuber-Skerritt, O., (1992). *Action Research in Higher Education: Examples and Reflections*, London: Kogan Page.

10. Appendices

The Appendix1: CEN online questionnaire

Dear colleague:

Thank you for your commitment to being part of the network. As part of the development of the network I am exploring the Continuing Professional Development (CPD) interest of members in an effort to develop a network-wide framework for CPD. These sessions will be offered at no charge to members of the network. We will want to ensure that you are offered discussions that will meet your needs on a personalized level. The sessions might be moderated by educators like yourself, university lecturers, consultants, and practitioners both regional and international. Your support is crucial in completing this very short survey which will provide feedback on the planning of these sessions. The survey should only take about 5-8 minutes to complete. By taking part in this survey you are also giving consent to the data being used for improving the network and for research as part of my PhD studies at the University of Nottingham. Please answer as truthfully as possible as this will affect the outcomes of the planning and delivery of courses. Thank you in advance for your time. **LeRoy Hill Network Administrator**

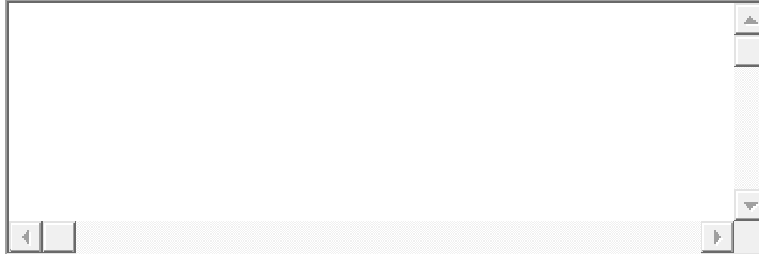
*Required

Your working environment would most likely be categorised as * Select option that describes your work setting

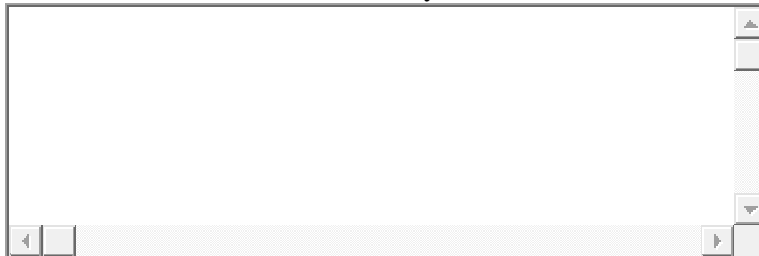
- ☐ Nursery/pre-School
- ☐ Primary School
- ☐ Secondary School
- ☐ Special School
- ☐ pupil referral units
- ☐ adult and community-based learning
- ☐ voluntary youth agencies
- ☐ teacher education and training
- ☐ further /Higher Education
- ☐ Department of Education

-  Other:

What value do you get from being part of CEN?



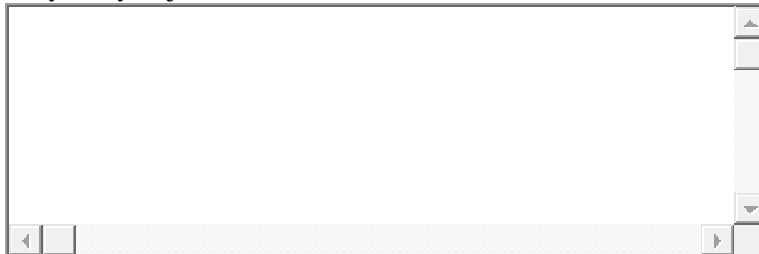
What further value can CEN be to you?



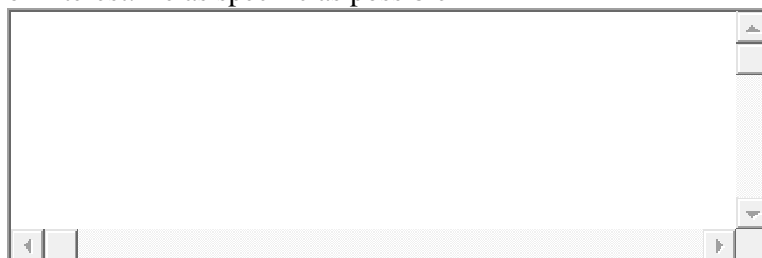
Which is the most influential factor when choosing a training course?



Why did you join the CEN network?



Please suggest some areas/topics that you are interested in? * Indicate at least 3 areas of interest. Be as specific as possible



Please indicate which day (s) you are available when would you prefer to attend training/networking events?

- ☐ Monday
- ☐ Tuesday
- ☐ Wednesday
- ☐ Thursday
- ☐ Friday
- ☐ Saturday
- ☐ Sunday

What time would be most appropriate for you to take part in live workshops? Indicate time you would be available most.

From a scale from 1 to 4 please indicate how important you consider professional development to be to you?

1 2 3 4

Very Important ☐ ☐ ☐ ☐ Not Important

Cost Please indicate the most appropriate answer for option above 1 being the most important – and 4 being the least.

1 2 3 4

Most Important ☐ ☐ ☐ ☐ Least Important

Location Please indicate the most appropriate answer for option above 1 being the most important – and 4 being the least.

1 2 3 4

Most Important ☐ ☐ ☐ ☐ Least Important

Time / date Please indicate the most appropriate answer for option above 1 being the most important – and 4 being the least.

1 2 3 4

Most Important ☐ ☐ ☐ ☐ Least Important

Length of Course. Please indicate the most appropriate answer for option above 1 being the most important – and 4 being the least.

1 2 3 4

Most Important ☐ ☐ ☐ ☐ Least Important

Accreditation Please indicate the most appropriate answer for option above 1 being the most important – and 4 being the least.

1 2 3 4

Most Important ☐ ☐ ☐ ☐ Least Important

Appropriate Content / Skill level Please indicate the most appropriate answer for option above 1 being the most important – and 4 being the least.

1 2 3 4

Most Important ☐ ☐ ☐ ☐ Least Important

Do you invest (time/money) in professional development opportunities?

- ☐ Yes

- ☐ No

Do you actively seek out professional development / training opportunities?

- ☐ Yes
- ☐ No

Can you please give us information, on the last training course you attended?

How would you describe your interest in the topics offered at these sessions?

- ☐ Very Interested
- ☐ Interested
- ☐ Somewhat interested
- ☐ Not Interested
- ☐ Other:

Would you be interested in leading/hosting a training session on a topic of your selection? please email your choice of topics to caribbeaneducat@gmail.com

- ☐ Yes
- ☐ No

Would you be interested in being part of a small group on the use of video for professional development and teaching reflection? Please ensure that your name and email is given below so we can send you the appropriate information and equipment

- ☐ Yes
- ☐ No

Name

Email

Appendix 2-Transcription of Synchronous Meeting

November 28 2009, Meeting number 3

Meeting for in session for 1 hour 19 mins

Bert - audio not working so his chat logs form part of this transcript instead. Time is given first in all chat dialogue, while the name then time is given for the audio recording.

LeRoy: 0:09

We want to Welcome **Bert**, we want to Welcome **Jean** to our 3rd planning meeting. We planned one for the 21st of November and we missed it somehow we are here on the 28th today its 3 of us. I want to specially welcome **Bert** because this is **Bert** first meeting and Ah...we should just introduce our selves to **Bert**. Do you want to go ahead first **Jean**? then I will follow.

Jean: 0:50

Hi **Bert**, [um] I am **Jean**. ...I am from T& T I am currently doing my PhD in Education, majoring in Curriculum & Instruction more specifically, teacher education at the University of Wisconsin in Madison How I came involved in CEN...was maybe quite incidental or coincidental...someone invited me...it was Alli who invited me to be a member and then I decided to do a research on online professional development groups and I did a study of CEN for a course I was doing on professional development and then as a result of that, [om] **LeRoy** was very interested in [pause] what I produced and then I am here as an Advisory member...so i was just quite interesting so I am trying my best to keep up to date and with stuff it's just that school now is really has really taken over my life so I am really sort of trying my best here to keep up with things so I am really but nice having you **Bert** and let's see if we have a wonderful discussion this evening.

Chat LOG: 01:49 - **Bert**

I am the CEO of the Enabling Support Foundation a non-profit with a dual mission for persons with disability and k-12 education.

LeRoy:2:18

Thank you **Jean**...I am sure that we will have a good session this evening, and **Bert** is saying in the Chat that [reading from chat window] he is [chat log post from **Bert** goes here] in fact **Bert** has been active in the disability section but he has also been involved in Mathematics...and correct me if I am wrong and I think using Excel for teaching maths and I think quite a number of other feedback [am] quite a strong...and I did mention to him that I would not be able to take part in something I can't remember and I told him I would be...and he offered his...and I offered him and welcomed him into the advisory group and he willingly accepted so that's great [am pause] I am a PhD 2nd year student at the University of Nottingham taught for 13 years humanities [am] in a small island tiny island called Anguilla, [am] I was born on the island of Dominica [am] but I am in Anguilla and 13 years I taught there, did Social Studies, Studied in Trinidad & Tobago and I did my Masters in Instructional Technology at Virginia Tech and that is where my interest in ID actually started. One of the areas for me that gap [am] was the whole idea [am] professional development /teacher education but [am] trying to link that with my interest was something that seemed impossible with the context of social networking and therefore this is what sparked the whole interest in trying to make this process more formal. I have quite some time in teachers union, I have served two terms as **Jean** Sec for two terms and one term as president so [am] it this gave me a visual insights of some of the concerns of teacher education...I felt that instead of being a complainer why not just [am] take the bull by the horn and tackle the issue and see if we can actually we can actually make we can actually inform change so that's it.... what what what I am going to do is just go through the meeting agenda and its respectful for me to ask both you and **Jean & Bert** [am] how long do we think [ah] the meeting is going to last for tonight...how long you can have

CHAT LOG 04:51 - **Bert**

I taught stat and research for 35 years and I can help in any part of your dissertation. Please count on me for that. I also notice that you are on the Google Wave we can use that perhaps,

Bert: [**LeRoy** reading from chat screen] 5:00

Bert is saying that he taught stats for 35 years and he can help in any part of my dissertation...[great!] you can count on me for that...i notice that you are on Google Wave and you can count on me for that.

LeRoy 5:11

I tried Google wave but its seems to be difficult for me at this time to manage Google wave and so many other things technology is going so fast than we can catch up with...I did try ...how long to we have how long do we have...**Jean**?

CHAT LOG 05:57 - **Bert**

difficult for EVERYONE!!! I have found some good docs to make it usable

Jean: 6:15

Oh boy...I was really planning from 5 to well no..it's now a quarter to 6 by me [EST - 11:45 GMT **LeRoy**] I was really thinking an hour but since we started late [om] maybe another half hour I think.

LeRoy:6:30

ok ok, so in half an hour's time we will try to discuss [**Jean** chuckles and cuts in]

Jean 6:32

[half laugh] maybe 45 mins to be fair [laugh/chuckle] we will try to cover everything

LeRoy: 6:36

45 min to be fair...we will try and ... so **Bert** says he is flexible so we will lean towards **Jean** 45 mins I am sure we might just go a little above that and then we could more or less negotiate at least a 5 mins extra to see what we could get through [om] that's good. I am hoping though that the others will come...in the meeting room. The time-frame for others. I know Dec is a time when we don't get much school work...I have a lot of school work to do my sup gave me so much writing to do but [am] I think December...later on in Dec can be quite flexible for us maybe we can plan some meetings instead of going into the next year and we haven't achieve much with a whole set of meetings in the next year. I don't know what you think **Jean**...[reading from chat log - so there is no break for grad

student]so do we, do we, do we [am] [am] agree that we could have at least another two meetings in Dec? **Bert** is that ok with you? **Jean** is that ok with you or is that too much? [text suggested dates in chat log]

Jean:8:20

I could try but my semester ends on the 17th 17th yes so the end of Dec will be the sort of in the height of final papers and that kind of stuff so..I guess I will just have to bite the bullet because there is never really a good time really the way my life is going [chuckle]

LeRoy 8:51

So what we actually try to do is have one after the 17th or two after the 17th to make it flexible

Jean: 8:53

Well I will be in Trinidad. I'm going to Trinidad for three weeks from the 20th [pause] of December to the I'll be back on the 13th of January

LeRoy: 9:08

Your computer...do you have access to your computer while you are there?

Jean: 9:12

Well I'll be taking my computer with me where I am staying it all depends on how their Internet system is working and all of that

[skipped some irrelevant stuff]

LeRoy: 10:15

What I am going to do is just...we haven't decided on the order of things but I think the two things that from the last discussion we had is leadership & communication...and we thought that we would open up

[Review of Nov 7 Meeting]

LeRoy 14:09

Did I miss something **Jean**? don't know if I miss anything...

ACTION: Shared some work from Jyri Engeström (2007): five principles for Web 2.0 success

- 1. Define the object round which your service is built.
- 2. Define the key verbs for that object
- 3. Make the object shareable!
- 4. To grow your user base, think about what can you provide in terms of a gift users can offer their friends
- 5. Work out a business model where you charge the publisher, not the spectators

14:39 - **Bert**

I come from an entirely different approach. I am involved in activities that I want to see can fit into our framework

JEAN 20:42

Hello again...[am] who's group is it? I have been thinking about that, It's really ours, it's our community but we have to have a purpose really and I am really thinking it's our ultimate purpose can be two fold. It is for our personal professional development as teachers, educators or whatever other functions that we are in but intimately the goal should also be to improve student learning. How can this best develop? I haven't thought this through as yet but what I remember I remember **Bert**. **Bert** mention that there are many groups that have spawned on the network but somehow have remained dormant so how can we generate more activity in those groups so that ultimately it can benefit student learning? So those are just my thoughts for now.

LeRoy: 21:54

Mille you want to say something here?

Mille: 22:09

[am] I was reading all the slides and I am thinking I'm looking at this bullet points right now and I'm thinking. Why do we need to define the group or community? Because you already have it already defined and why do we have to define it further? I understand that we need to have a purpose and a goal and I agree with **Jean**...that it must be focused on learning outcomes [am] but I am not certain why we need to say whose group or community it is...if we look at [am] many groups that are out there [am] I mean it's really open to the public and sometimes some of the best ideas can come from people who are not necessarily originating from within that personal group or anything ...because that questions suggest that we might pose restrictions if people from outside the Caribbean want to join or if someone else who is not defined in that group wants to join so I am just querying that so maybe you guys can let me know about that. How can this best be developed and what is expected from the members? [am] The group is huge that's the major problem right there and managing a group this large is difficult when you have many people coming here with different [am] how should I say with different views of what to expect and not receiving those views..so like **Bert** was saying in his post maybe you should have moderated forums whereby you can create a forum and from generalised topic maybe 3 or 4 restricted to that number and have a generalised forum where you can post different things and have the conversation going as opposed to...anybody can create a forum. Maybe that would be a better way to go about it but in these kinds of communities or groups if you start putting restrictions and putting guidelines that...where I heading towards you may lose some of the people who are members because they may not identify with what our goals are...so that's [pause] what I am thinking.

LeRoy 24:34

Ok very good. It clears up, it clears up a a lot definitely we we seem to have [am] views that may not necessarily be on the same [am] which is quite good [am] which is good because we have to more or less come to some consensus with what exactly we are doing here. From from the initial activity of of reconnaissance or benchmarking we we're actually doing quite a number of meetings and and and from from generally what people interested in but [pause] the question or not if it was sustainable...is this something that can be sustained [drag] [am] over quite a long while and how is it going be sustained? We would, we would need to have one person looking through the different groups and different interests to find out

and find and scout and get different forums and meetings established and I think that is where where the benchmarking showed that the interests are so wide so varied that its virtually difficult or impossible to have that kind of...but what i think is is brought up from the ideas is the groups [am] if within the community [pause] let me use the word network. Alright within the wider CEN network there are subgroups that can take different sense of ownership in in their own professional dev and [pause] I think where the question of whose group came out is the idea of goal...if we understand that this is our group yes there are there??? but the sense of ownership and agency that I think, I think that that addresses,[am] I don't know, and and as we all agree the purpose of the group, and how best it can be developed and so forth and what is expected from members do we expect them through collaboration, how how should they collaborate? in what ways? I do I do find I think we should have least restrictions as possible because we don't want to to run away, move away from the point that people don't like being restricted in certain things definitely the the wider CEN has members who are not from the Caribbean and I think if we just observe what is going on now and accept that or trying to adopt that or make it part of the process rather than instituting it by making it a rule can be a way forward as well. I don't know if I am making sense [am] [reading from chat log] **Bert** says I have a series of activities which can be implemented in CEN look... [See log entry below]...go head **Mille**

24:46 - **Bert**

I have a series of activities which can be implemented on CEN. We can look at how those activities fit our nascent framework. Start with the activity and use that to form the framework. I like that better than starting with the framework and making activities fit.

Mille - 27:31

I have a suggestion

LeRoy 27:35

Go head **Mille**...

Mille: 27:41

ok yes I have a suggestion whereby you want to encourage activities on the in the forums one good way by doing that by inviting maybe [sniff] a class from UWI where their teachers can do an assignment there [am] you can have groups from [am] like primary school teachers from a particular primary school or from a bunch of primary schools meet there once a week but in other words you have to sell something to them. that's free that they can use and they can benefit from and that's one way in other words going to different organisations or entities and letting them know that these facilities are available and this is what we are going to start with have people [pause] dedicated people who are in charge who are interested in different fields or whatever running these different or different areas...and in that way it can, [**LeRoy** - Emhm] it can pick up without any major work from anybody else....they will begin to run with it [sniff] there needs to be advertisement, it's not advertised in the Caribbean that this is actually there for teachers for people to [stress on to] use as oppose to its just there.

CHAT LOG 29:06 - **Bert**

Mille. I have some things going that fit right into what you are saying

CHAT LOG 29:18 - **Bert**

Wanted to give an update on what I am doing these days. I think things are starting to heat up.

Wave

Still in the exploration stage, but the Brain Wave is something I plan to develop, along with the Database of Consciousness.

Collaboration

We now have connections with A city wide program in Menkes Morocco with 1200 teachers. We have 4 potential pairings in hand and that was our first try. We are looking to develop a big brother program where the older Moroccan student to write better English while helping a younger child on other things including exchange of culture.

I am on the Advisory Board of the Caribbean Education Network and have made a few friends there. There is a meeting tonight and I am going to see how we fit in.

Support Interns

Aries has 8 graduate technology students who would work with individual teachers. They can work with teachers on individual projects, Art Projects including Mythology, information collection and publishing, and generally being the interns I was considering for a while now.

I will be in contact with Rita Oates who runs ePals. I have some ideas I would like to run by her about the success rate and follow up. If she does not take that kind of active role with the applications, I will suggest that ESF create a database of interest in collaboration, grade level, special needs, subject area, role, etc. So I can search the database for 5th grade and history to find teachers who match.

Improving Writing

I have a friend who wrote

LeRoy: 29:06

emhm ok so part of the problem is is lack of people not knowing and I agree with you aaand per what even even if its advertised, do you think its...what we are suggesting here will be sustainable? [am, am] would that be sustainable? in the long run [yeah - response from ??] it would involve someone myself the thing is if I take myself out of the picture [am] what would happen to the network? That's what I am looking at. [29:43 - **Mille:** right now nothing.] [Laugh] if what you are...

Mille:29:47

Right now nothing would occur [**LeRoy** 29:48 - right] but if you identify a person in om in each island as the person in charge of the CEN moderating groups on that island or! or then you can look at it in a different way I am interested in research. I notice that the Caribbean has very little research happening in it. I wouldn't mind being the moderator for research [pause] forum and then ask different types of research questions and and put it out there and find out what research is going on what would you be interested in researching and get different kinds of questions going. That way people can log on and can see that there are many people from the Caribbean who are not home anymore who are doing work [**LeRoy** - 30:32 -

Right] who can assist. Right, so that's the way I see...these networks are very difficult to sustain as well as maintain but you need the members to do that [pause] and you need to take some of the stress off you and put it to the members and let them start running with it.

LeRoy: 31:00

I am thinking....do you think perhaps formalising through a framework [am] could make it easier for us? At least we are on the same page? At least the know what the Advisory group would like the other groups to do.

Mille: 31:13

I understand why you want to create a framework but like I said you want to create a framework where you don't have I mean any activity going on so my question is do you create the framework first and then you try to draw the activity or do you wait for the activity and you try to guide that activity? I feel it's the other way around because you can create a framework and you can restrict people on how they are thinking...right now there is not enough activity going on in the network for anything to be put in place.

LeRoy: 31:49

Right! The thing is while there isn't enough activity now...I think we have had enough activity to at least get the thing going and I think that what has encouraged this to this far and I don't think the whatever framework we develop will remain in stone it will change but I think that if we have something it will at least guide. cause I think that guidance which is needed for group leaders can help them in other words to steer things forward using all those suggestions that you made can actually make be part of that process...I think it's a two way process and if we wait for that to happen that that that I think, that that people are looking to to us in terms of [am am] direction because they as well have these groups and there members are not...they do tell us that what I am I doing wrong here I am not seeing anybody here they are reaching out to their members but again what are we as researchers telling them how are we helping them to make their process go forward aaaand ...

Mille: 32:53

Well my view on research is there is that my review is that a community is only as strong as its members the advisory council cannot guide the members activity. The members have to guide the community activity the network activity. If you understand what I am saying? [pause] [**LeRoy** -33:12 yes] right so then that's my view there that I understand the need for the framework and I am understanding why you would want a framework. My problem is that you have this framework and then it's not guiding nothing! Because it's just there as a structure and the activities that are happening are very small and restrict the framework start to kind of restricting and and saying what can be done what should talk about what we shouldn't talking about that kind of stuff as opposed to just getting people talking.

LeRoy: 33:48

I don't think. I think. I don't think the framework is to restrict... [**Jean** 33:54 May I] go ahead **Jean**

Jean: 34:01

The framework is from my understanding is not a restrictive thing because I am listening to the conversation and we do have a concern that the activity is not as sit should be within the different groups. The framework I think will [pause] will initiate questions and will start people conversing and that could probably restart some of the activity but a framework is not necessarily restrictive it will have some overarching principles but then things can mould into it that will suit people, that could suit peoples desired outcomes but conversations have to be restarted again so maybe some of the leaders in the group as **LeRoy** say why have they not responding maybe the leaders probably need help in posing questions that can initiate conversation I guess...

34:36 - **Bert**

If the CEN creates a project, those who want to be involved in the project must abide by the CEN framework and standards.

34:55 - **Bert**

We of course must be flexible

Mille: 35:08

Yeah but you cannot pose questions to someone who is not listening. And that is my point. [**Jean:** 35:13 ok so] you can have the huge framework and the members are not participating...

LeRoy: 35:24

Ok I think what...is that yes we have to sell these things to the members and marketing and advertising that becomes part of it I think if we have something at least they would have known that we have taken some time to think through that...trying to formalise a complex and chaotic machinery...organism is not sensible in sense but we are trying to bring some sense make some sense of what we are doing as professionals [am] in that sense...I don't know if you guys are...seeing what I am...

Jean 35:59

Because if there is very little activity now...my question is to **Mille** is how do you suggest that we suggest [ah] that we can stimulate activity again...

LeRoy 36:15

I think...some of the two suggestions were quite good. I think is a very good way forward and it would still involve the element of one person going out and asking different persons of different groups without having some structure for those actual individuals to follow when the form the groups how they can actually take the process through....now the ownership the leadership...these are not restrictive roles these are roles that actually evolve as a result of the interaction from within the community[network] and what we have more or less...so what i think we are doing appears to be the way forward and with the insight that you have given **Mille** we can use that and make that part of the process, part of the framework that we will use or encourage thought those means...and I don't see it as being [am]...cause if we wait and try to encourage it builds that when they come what structure do we give them do we need to give them a structure let them develop their own structure let them know what the advisory group see because we see number 1 you need some sort of structure you need to the idea of roles...who's going to do it? Is it going to be the leader alone? What is my role here? I'm I going to take ownership

of my own prof. development? how am i going to do it? am so these are questions that if you force people to think they will realise that this is true, this is not just for my leader this is for me and therefore I have to take a role in this process and therefore the question of ownership seems logical...

Mille 37:53

ok...maybe my understanding is a little different and probably that's why I'm not understanding where you guys are going maybe with that's where the confusion is with at least me as to what is the purpose of this framework...the framework is probably to guide moderators potential moderators in having discussions on the discussion forums. Is that correct? Is that what you trying to do?

LeRoy 38:24

Right Right more or less and what we said is that what we do here what we emulate here within the advisory group may or may not work for another group but they will see what has worked for us we have actually went through a process of making sense because advising. This advisory group in terms of [me] who is the designer and trying to make sense of all of these things which is an evolving process it's like flying a plane and designing at the same time [**Mille**: 39:00 ehbm, 39:03 yeah ok] you don't know what to do...and if you make errors lives are at stake [laugh] in this case the community [meaning network] sustainability is a key factor and I think perhaps most communities when they develop in the online setting that is not in the back of people's mind formalising and I mentioned this earlier...let me just go back to this by Engeström [slide - 5 principles for Web 2.0 success - jyri Engeström 1997) who developed Jaiku and is actually working for Google now...but again these are some basic principles and what I am going to do is to expand on these in the forum...for example if we look at Flickr, the object in flicker is really photo sharing and I think we need to define strongly [**Jean** 39:52 yep] as **Jean** and [am] **Philicia** said in our last meeting we need to identify ...is CEN just there for saying 'Hi Hello, sharing knowledge? What are we really sharing? [**Jean** 40:04 yep] is it really professional development? Teacher learning? What is it we are doing? And I think this is what we need to identify here....and use the key verbs to identify that object [**Jean** 40:14 yep] make the object sharable...

39:08 - **Bert**

If we develop a heuristic framework, we can use that framework for future projects.

Mille: 40:17

Well then what i am hearing is the purpose and the goal I am not hearing a framework. [**LeRoy** 40:21.ok] that's what i am hearing and I think that's where I am getting confused. I am hearing a purpose and a goal [**Jean:** 40:27 Well...] I am not hearing...if I understand that the purpose of the CEN group is to do sharing, collaboration, research that's the purpose and the goal but how does that?...I am still not clear on what the framework you guys are trying to get to is and that's why I am getting confused...

LeRoy: 40:51

I think that is why we deliberately use the word framework instead of model because we felt that we should not go that route instead of looking at something that is too linear too one dimensional at...

41:06 - **Bert**

Professional Development is also a goal

Mille: 41:09

Can someone tell me then what is not within the framework then? so I'll get an idea of what's in the framework [laugh **LeRoy**] [**Jean** 41:16] The purpose...] because I am not understanding the term the use of the term is what's confusing me.

Jean: 41:30

ok the purpose [voice fades...then returns] but within your framework you do have a purpose, your goals that you want to want to implement because to achieve something so your framework is essentially that does my knowledge say about my professional development, my students... that is my thinking about ...what is my understanding of learning and from that your goals your purpose emerge your goals and your purpose are essentially embedded in your framework and where you want to go from there so when you have decided your goals then you

plan then you implement then what do I want to accomplish from these conversations...keeping in mind that the ultimate goal is student learning....[**LeRoy**: 42:31 -ok] does that make sense?

LeRoy: 42:33

It makes a lot of sense but I think perhaps **Mille** you can deconstruct your understanding of framework and see where we are in the the different and try to come to some consensus with the terminology we are looking for to ,...

Mille: 42:49

Ok...you mentioned Engeström Engeström is very [am]. His initial idea...I think his initial if its the right Engeström his initial idea for ...was with the Activity theory model well the Activity theory and some people use model and framework interchangeably but his framework was this is where we start and this is how we move with roles and actors and experiences and objects and everything and actions now when you said a framework I immediately felt like you know within that framework of Engeström there is a restriction...there is an area where you can invest in and there is an area outside of that...that's what I was asking you what's outside you are thinking of and I think from my understanding. I think the community is a little too young to start putting restrictions because we don't have enough activity to start saying this is what we want to concentrate on this is what we can concentrate on if we have sufficient activity then we can say ok you guys can go over there and make your own board your own network based on those points but I think just having a purpose and a goal might suffice just for now until we get there...that's what I am seeing because I am not seeing...right now for the Caribbean network like **Jean** said I agree totally the most important thing is learning outcomes and it could be student learning outcomes it could be who ever on the receiving end now if that is our main purpose and goal what's outside of that? Everything attached - professional development, different ways of teaching pedagogy, different styles, different cultures, languages all of that is assigned to learning outcomes. So my question is what's out of that? so In your framework you have learning outcomes but what's outside of e-learning outcomes you are not willing to entertain in the network that that's what I am trying to understand as to

what is the guide where you guys are going with that...I' still trying to figure it out myself based on what everyone is saying I am trying to gather [laugh] there maybe I am a little slow tonight but I think....

LeRoy: 45:21

No...I don't think you are slow **Mille** I just think we are at different spectrum of of of I would say ieee[pause] [attempt to say something] and I think I came from that idea we have to think within a particular model, a ID design structure and it what this says within the social networking context is that we cannot use any predefined model for designing the mechanism or the organism [**Mille:** 46:05 because its social] because its social its dynamic, its evolving and therefore but does that mean that you can't really observe and notice and identify and highlight these things that you are observing we know that the objectives [meaning object] is professional development for us Do we leave it to be chaotic? Do we force it do we make it critical? and I think that were we put in some not necessarily a hardly bound structure but it gives it some sort of objectivity [meaning some sort of instrumentalism] that it actually goes towards some sense of making sense to some people and people can align themselves to those and if they are not aligned to them they could as you suggested go in an area where they can make some sense to themselves and create that kind of objectivity for them and that in itself is the outside [am] This here is really not from Activity theory this is from Jyri which is Engeström's son I think who developed the Jaiku and I guess from...I guess he is looking at why some web web fail they fail because they fail to recognize that object and I think for us we have recognize that object but I don't think its its its strong enough ...within the community..within the network and sometimes we use the word community and network interchangeably so and we need to change...it forces us rethink the use of words and that's why we carefully we didn't want to use the word model because it sent the wrong message the wrong signal that it had to be something that is predefined no! we wanted it to be something that evolve as we we observing and what we have seen what we have and so we talking about it is part of the process and part of highlighting and deconstructing these issues and things that [am am] definitely come out from the from the so you are so certainly correct there are some stuff, if we gonna say its framework and its structure is bounded we are going to leave certain things out which is definitely wrong and what to do is not that what we want to do is to provide some sort of objectivity that it has some sort of

trajectory that members can choose and whether or not this makes sense and and this is something that we can follow our area is Mathematics but how do we define? How do we operate here? Do we let everything operate as is? Should we work collaboratively? Should we have some sort of leadership roles? I think these are questions that any any group in anything can definitely come come to accept and It think that's what we are looking at not necessarily the restrictive part of it. I don't know if...does that make sense? [Mille: 49:03 yeah it makes sense but I think framework is the wrong word] [Jean 49:06 chuck/laugh] ok let us have let us decide on a different word [Jean 49:14 Mode of operation] I think we have to [Mille: 49:20 Mode of operation is fine...but I think your goals and purposes outline that] Right we will have to come to some consensus on that so I'll have to put up in the notes and we will have and again its good that that came up because am that was one of the things that we definitely agreed no we cannot have any model it sends because this thing this an animal you don't know where its gonna go how its gonna operate and and we are trying to shape this animal...which is not a single cell animal [am] organism into something that it wants to be something else so again its its not what...but definitely am so am can I, can we move on? because I know we don't have time ... [Jean Mille 50:08 sure, yes] we can definitely come back and expand on those things in the forum by the way is it confusing to people that we have because it was suggested that I create the two sub areas those are the areas of contention right now not contention discussion am ownership & roles and communication and leadership so there is a tendency for us to post in anything in anyone of them and I don't know if that made sense to put those or just have the general areas and have roles within that or try and put some structure I don't know.

46:29 - **Bert**

I am reminded of the blind men describing an elephant by feel.

47:59 - **Bert**

Define the object round which your service is built assumes the existence of a service

49:14 - **Bert**

Not restrictive, but informative

Mille: 50:47

I think there are the same...because you cannot discuss roles without leadership ...remember this is my view coming hindsight. [laugh] you may have had different discussions...

LeRoy 51:00

[talking about posting in general group wall of in specific discussion forum]

51:28 - **Bert**

Has everyone a wave account? This is a collaborative document and a wave is a good place to build that?

51:41 - **Mille**

yup have a wave account

LeRoy 53:19

I said that I would revisit this but is there any questions anybody has on my role in this I think its possibly a good way of approaching this and maybe I could go in and clarify some of those things

Jean: 53:36

LeRoy maybe...there seem to be conversations and the fact that there seems to be different understands of what really is what are the expectations om maybe if you make your goal for the network clear I suppose you can probably have people thinking along certain lines. I don't know if that would help as with one of your roles. This is something that you created but what is my ultimate aim for this? And maybe you can start people thinking in a particular way I suppose people probably not clear together as to what people have different ideas of how it should go I don't know...

LeRoy: 54:23

The thing is I don't think I own the community and that is one of the dilemmas i had to come to grips with..its something that is [**Jean** 54:34 Right] [pause] mutually owned and I think one of the things that I can advertise the ultimate goal and I think

that's where the participatory element comes in [**Jean** 54:45 ok] I think my role here is trying to guide things along, facilitate sharing along...taking a back step ...the more I put myself into this the engrained I remain into it and the less others and I think the more others are part of it the more it becomes participatory it becomes them [meaning us] rather than me I think that's the only way...today or tomorrow I fall down and that's the end of it and i think we used the quote from [**Jean** 55:21 yeah...work yourself out of a job] it says[reads quote] ok...i will like to highlight...**Jean** would you like to read...what you said her [56:14 statement from **Jean**] I think that identifies the type of leadership I will like to think that we should emulate and I think that this evolve...we got some persons volunteering to be greeters and there been some greeting going on and there have been some obvious that there have not been any greeting.. am **Mille** volunteered to do moderator and she did moderate the session with Ian Robertson - Activity theory the one we did in Dimdim that proved quite problematic for technology. Technology do fail us it was quite an inductive session that really showed us how the theory is used and how restrictive it is and how it is used in different senses ways and so forth am and the whole idea of the advisory role in terms of we discussing this and coming to some understanding i think is all part of the leadership process and we all taking different leadership roles am and I think in my role is one to steer things along that's the way I am seeing it. In terms of the research process what goes on within this community is a research community and I am trying to document as far as possible my thoughts trying to make justification some of the actions we are doing here and coming to an understanding that what we are making here is something that is quite complex quite difficult and what we are doing here is..... process in trying to understand how we can make things a bit more sustainable So i don't know if that makes sense **Mille, Bert** are there any questions from you in terms of ... [long pause] [**Mille** 59:04 No...I'm ok] ok leadership and communication so we said that one of the problems is trying to identify one of the protocols I'm wrong...some of the types of leadership that exists and we don't want to tell people what form of leadership to have but from what we observe the type of leadership that is sustainable or forms of leadership that is sustainable in other words to make the community grow and share some of the responsibility seems towards one that is collaborative and cooperative I don't think we should put a name on to that I just think we should mention whatever form it should encapsulate that I don't know if we want to put some frame on that or

restriction on that...these are the things that came out of our ...it should be collaborative, it should be cooperative, it should be participatory therefore I am thinking along those lines am for example for we could decide for next meeting that this is our agenda and perhaps next time instead of me chairing the meeting someone else could chair the meeting which seems fair to me in terms of leadership responsibility and roles I don't know if you all agree...will you all agree or not? let me know **Mille , Jean** [pause]

57:17 - **Bert**

Goals: 1) Integrating the schools into the existing technology; 2) Professional development with a technology orientation; 3) Acknowledge individual differences and accommodate them

57:50 - **Mille**

nice goals

57:55 - **Mille**

think there are more though

58:09 - **Bert**

I hope there are

58:46 - **Mille**

I'm good

59:15 - **Bert**

fine. I am not a leader, but like to do things

59:43 - **Bert**

I think leading by example is very powerful

1:00:46 - **Mille**

definitely

Mille: 1:00:53

LeRoy...am i definitely agree with that right now I'm in charge of a global network here through my university and we are having the same problems that you are

probably facing which is stress from doing all of the work doing all of the presentations and pulling everything together and our partners are not doing anything so it's the same the same am how should I say the same structure that you are using we've been using it for a while now and it does get strenuous and we have been rethinking that whereby every partner has to have some measure of input for the year of activities so we re putting that in all our contracts now and maybe that's what you should have. You should have a moderator to each one of those sessions that you want to do. Research, professional development etc and let those moderators have at least one activity per annum which they are in charge of and they have to work and advertise it and get it out there and I think that's a good way to start on that structure that framework that you are ...to as well as to work on your purpose and goals of getting everybody going so that's my suggestion.

1:00:57 - **Bert**

I am not sure what you mean by rules or protocols?

LeRoy: 1:02:16

and it is a good suggestion and although it's looking at it from the ...correct me where I am wrong you are thinking of the general CEN am network although I am thinking that's what you are thinking the general CEN that we will let them more or less one person within the advisory group take on that role to speak to that theme...

Mille: 1:02:47

yeah you don't have to have one moderator for research alone you could have five moderators doing research and they each have a different topic within research but I think what you can create and I think what you are trying to get to from rules and protocols. Maybe in order to be a moderator you have to come up with a plan to be a moderator to be accepted maybe that's what you are hinted to and i think that's a good idea and that before you are allowed to be a moderator you have to know what your background is you don't just go and have some discussion and if you understand what I am saying there is some guidelines in which you have some discussion and it's within the theme of the CEN network or whatever so I think that's what possible you are hinting to and I think that's a good idea.

LeRoy 1:03:34

This is not deliberate but am what we can do is while we are discussing because I am not picking up everything that **Bert** is saying in the text since he cannot use any sound so...[**Mille** 1:03:55 he wants to know what rules and protocols and I wasn't sure and i just hinted to that while I was explaining.] right so am quite a mouthful here and I think that gives us much for insight **Mille** would like to know if that helped. One of the things we said we did not want to formalise any rules and we are seeing as time goes on it may be necessary for us to start looking at some of these again but we have to revisit some of those things again...so it is accepted that we will share as as leadership as we go along am what is a protocol...the established means of communicating within am the network. How do people actually go about doing that I think we have established some protocols in that members welcome people and I think that is one of the protocols that we should adhere to and continue but within the group itself what are some of the protocols within the group I am not taking the wider network I'm taking about the groups groups of interest what are some of the rules and protocols that we think already exist and I know that **Jean**..have been part of the Math group and some of us are part of different groups and there are certain things certain protocols that I don't know if anybody notice any protocols.

1:04:15 - **Mille**

does that help?

1:04:57 - **Bert**

It is still too abstract for me. I need to talk more about it at leisure rather than in real time

Jean 1:05:49

The simplest protocols that I observe when I joined the network was your contributions....take for example simple ones like being respectful and there's some people who use the network to spam different things and those kinds of things that would not be tolerated that kind of spamming the network [**Mille**: 1:06:16 well that's what a moderator is for those things are moderated is the network going to be moderated? or is going to be a free network?] right simple things like that...I don't

know if the other things may arise as the network I suppose things may arise continues to grow we might see things that need to take things further.

LeRoy 1:06:43

Alright and you did highlight certain things because for some persons they may not want to steer the discussion in a particular way. How is that process done? Again **Bert** is saying that the protocol is too abstract for him...perhaps we can ...in the forum. How is that discussion actually steered? am I don't know if we should put restrictive sense on that we should leave it for group leaders to do or should we leave it open? I think that's where it's kind of iffy difficult to put a restrictions on whether we should have rules and protocols or whether or not they should?

Mille: 1:07:33

I think...I think the same that applies when we go to conferences we go to meetings that you don't curse anybody out you don't try to threaten anybody over the network or those things are moderated so that's why I saying that I mean in my session is if you get upset or anything you turn your mic off [laugh] you could say whatever you want but turn your mic off. We have that rule if you want to comment and its not positive please turn your mic off you know [laugh] don't write anything don't put anything in the chat. So I think those are things that happen on a day to day basis and I don't think you need to put them hard in stone until something occurs because I think people will be respectful. I mean we don't put that in our...we don't say that...but everyone knows that...[**LeRoy** 1:08:40 and I concur with what **Bert** is saying...that rules and protocols should enhance not block activity and I think that **Jean** and all of us agree that the general principle of respect should be overriding part there we've been doing all along] {1:08:54} yeah that's just great you put that as one of your mottos or whatever and people will see that and will think that this is a quality network it's not about a free for all so they will adhere.

1:08:15 - **Bert**

Rules and protocols should enhance, not block, activity

LeRoy: 1:09:06

Jean...I think I have gone beyond that so can i have permission to have 5 Right...ok I think we've reached our time and i will like to respect our rules that we established we established that we had 45 minutes to just close up?

Jean: 1:09:25 yes [laugh] permission granted [laugh, laugh] [**Mille** 1:09:29 sorry for laughing...I'm sorry] I'm ok man I would want to do is just want to go back to the themes that we have for the others we have to wait until the others give us some idea but I think what we should do is to start to think and integrate those ideas [for PD framework] or e-learning model we said we would not use the word model...or what was the word we said? It wasn't framework ...[**Jean**. 1;10:14 Way of operation] an e-learning operation mode or whatever...we will have to come to some consensus as to what ahh[laugh] **Bert** is saying that this was a productive meeting [would want to discuss if we are thinking that framework is a process or an end product? that might clarify some things] I have 4 more minutes, so again, can I have someone leading that discussion for our next meeting? And we have to I know **Jean** have said that she's going to be on leave from the 17th am but I'm thinking the inclination for this to be your baby since you are looking at PD but its all of us baby I think from what i could see in terms of **Mille**...I could throw it to the rest of the members as well..its just chairing some sessions of how we will like to see some of the things that we discussed here and those mentioned by **Mille** [and the postings of PD by **Jean**...] in that who so ever do it we will incorporate some of the suggestions that **Mille** has suggested which I think are excellent ideas and some of things things we already doing...so see how we can take this thing forward. Does that make sense? am...**Bert** is saying that this was productive and very happy to have **Bert** forced us to think yes if you are ready I can share the activities [1:11:34...reading from Chat log log] yes...go ahead...that's what we are doing here trying to open up the debate...to get as much ideas to converge am so am do I pass the baton on to someone else just to chair the meeting? [pause silence] 1:12:08 Yes **Mille** what we don't have is a business framework we have no idea for sustainability for business not on the list but I am thinking somewhere in the sort of things will have to put that in. and and thinking of an idea was am using our skills of...there are so many people in the Caribbean who can sponsor \$299 USD to help us have Elluminate which I think its an excellent tool the learning curve is not that difficult the others are so problematic and so difficult and try to get to some consensus and I'm thinking you have all these...Cable & Wireless you have yes...per

annum that's per annum. I think the price went down it was much more than that...we can put their logo ...again instead of me just going ahead and do that i wanted this to evolve from the process **Bert** is suggesting that we have a Skype discussion and **Mille** is agreeing with **Bert** am am run a wave its free...we have a lot of free am...Dim Dim is also free what we realise is that it posed a lot of problems for us even as in other words I think one of the responsibility is to allow other members to be in the discussion. and being part of the discussion is being recorded ... [continue to talk about the use of recorded sessions to make it available to others more open. mention was made of Zoho] I think that using Skype...if we can find a way to record the slides and record our recordings our chat logs we can always present those to the members what you guys are discussing they can actually see that. **Mille** says that she has a free recorder is that for Skype? Can it record chat as well as audio as well as presentations sot hats a good way to go. So then we will have to look at this as a framework to go forward. How many persons can Skye take in one session? [that this builds on is that we need to have a review of options available to us using our own usability evaluative framework.] but I really like Elluminate it emulates what happens in a classroom you can raise your hands you can ...and you have moderator and you have other participants...we have all those capabilities we have to look at the affordance and constraints [perhaps I can run a survey on Google of web conferencing tools just with two categories affordance constraints..] I want to thank you guys...we want to continue the discussion in the forum I haven't gotten a feedback and we haven't gotten a date can we have a date? Sometime after the 17th of December? ..if we can have consensus among the four of us it will be ok for the others to follow. Any closing remarks? **Jean?**

1:09:29 - **Bert**

This was a very productive meeting

1:11:29 - **Mille**

yes

1:11:31 - **Bert**

If you are ready I can share the activities in which I am involved at the next meeting. I will post some ideas on the discussion based on what we were saying tonight

1:11:56 - **Mille**

Need to find a permanent conference tool though

1:12:49 - **Mille**

Is that per annum

1:12:51 - **Bert**

It does not have to be a single tool. Why not Skye for oral discussion and in another window run the wave

1:13:15 - **Mille**

I agree with **Bert**

1:13:23 - **Mille**

It's free

1:13:42 - **Jean**

Does Skye have the ability to upload presentations/

1:13:53 - **Mille**

zoho

1:14:17 - **Mille**

I record

1:14:22 - **Mille**

I have a free recorder

1:14:32 - **Bert**

The presentations are in another window with

1:14:33 - **Mille**

Yes

1:15:01 - **Jean**

Not sure

1:15:03 - **Bert**

We need to discuss the details of that...I think at least 5

1:15:06 - **Mille**

I think last check was unlimited

1:15:11 - **Jean**

Have not explored Skype fully

1:16:12 - **Mille**

Skype is 25 persons

1:16:19 - **Mille**

After the 17th Dec

Jean 1:17:08

...with regards to closing remarks I will just like to say ...this whole idea of a community of learning in the Caribbean is a novel idea and we just think about what we want to do with it and even rethinking ourselves as professionals because I think it will really raise the bar where education is concerned in the Caribbean and we could be the agent for that change.

1:17:28 - **Bert**

I am flexible 17 or 18 are both free at this time

LeRoy 1:17:43

Mille any closing statements that we could...

Mille: 1:17:52

I'm looking forward to see where this goes my time is how should I say exceedingly tight because i am on numerous projects and I have exams next year Feb. so my time is so when you see I'm not around it's because of my projects and my research projects...am I think this is a good start and I think I've been following along on what you guys have been saying and I think that this is great I'm just wondering if all the work we are putting in here is really necessary I think you should start

advertising start doing getting moderators and start doing stuff and getting the word out there that's our major concern right now no one really ...they know about it but they don't know about it if you get what I mean. So I think that's what really should be the focus. It's easier to get I don't think anybody is going get on the network and just go you know on the opposing side of what the network is created for so I think some marketing and some PR needs to be done right now. I think that's the next step forward.

1:18:04 - **LeRoy** Hill

I think **Jean** is travelling on 17th

1:18:11 - **Jean**

on the 20th

LeRoy 1:19:12

Ok I will reflect more on the marketing [recording stopped...but agreement was that **Mille** would chair the next meeting on the 12th of December which will focus on PD or e-learning way of operating]

Memos

=====

Moderating groups ME - 07/02/10 [1] {0-Me-F} - Super

A very important observation here. Mille's contribution seem to point to the focus of the activity as being a guide for moderating group activity. Additional literature search is needed to validate this claim or perhaps something that where group activity is moderated online

Appendix 3 – Diversity of Learning Group Transcript

Appendix 3 – Diversity of Learners coded Transcript – Coder 3 (chapter 6)

The Diversity of Learning – A GROUP Coder 3

The purpose of this group is to accommodate the special needs of individuals. It applies equally to the blind and deaf, the autism and learning disability, and learning styles.
Members: 8 Latest Activity: Mar 19

THREAD A

Comment by Alli on May 22, 2009 at 7:45pm

Hello all

The CEN has crossed another frontier with this group. Special Education expertise is rare in Trinidad and perhaps in the region as a whole. I hope we all benefit.

I am particularly interested at this moment in any information on epilepsy and EBD that can help teachers at the secondary level.

Hope to get help or suggestions soon.

Comment [GB1]: Requesting information

Comment by Bert on May 23, 2009 at 7:40am

Alli,

Epilepsy is more of a medical issue and usually can be controlled by medication. We can discuss the problem, but little we can do than know how to react during a seizure episode. I am not sure I know the meaning of the term EBD. I am guessing that BD stands for Brain Damage. Can you clarify?

Comment [GB2]: Defining jargon

Comment by Alli on May 23, 2009 at 2:09pm

Hi By EBD I mean emotionally and behaviorally disturbed. I am further curious about your statement on epilepsy since a self managed epileptic once told me that medication is not the way to go rather it is more useful to document and try to work out the trigger for the seizures. I have a student at my school and his seizures are becoming more frequent so that the staff is very concerned and students who assist their classmate are losing contact time. He has been on medication for five years. I am uploading the form I devised and asked the teachers to use. The parents are willing to document as well but I am not sure where it will go. No one knows what to do but we have begun to document.

Comment [GB3]:
Defining jargon
Exchanging trial experiences
Sharing resources
Documenting incidents for follow up

Comment by Alli on May 23, 2009 at 2:14pm

recording chart.doc Epilepsy monitoring chart

Comment [GB4]: Sharing resources

Comment by Alli on May 23, 2009 at 6:10pm

This is a very interesting photo. Female, aged, obviously not a dominating ethnicity, not a westerner? Diversity?

Comment [GB5]: Analyzing data

Comment by Bert on May 24 2009

The photo has an interesting story. I was visiting the Taj Mahal in India when I saw a mother and child with the older woman and I asked if I could take a picture of the two. They agreed and when I showed them the result on the camera all three looked and enjoyed. Then the grandmother (I am assuming) gestured to take her picture also and you see the result. But when I wanted to show her the picture in the camera, she did not want to look. She would allow her own picture to be taken and could look at the picture of others, but not her own picture. There is much more detail in the original that I had to resample so it would be small enough to use. If you are interested in a copy of the original I will post it.

Comment [GB6]: Analyzing artifacts/data

Comment by Bert on May 24, 2009 at 8:29am

Alli, you have made a few comments and I want to share my ideas. One of the major problems is that terms like learning disability or emotionally disturbed are vague and I like to look at the diverse behaviors that fall under these terms. This is true within New York city, much more across the whole US. I expect there will be even more differences if you move to different countries and cultures.

First of all, my major expertise is in cognitive learning disability. For example, a child of at least average intelligence who cannot read. I do not like the term, but it is often called dyslexia. There is also math disability -- dyscalculia, another term I do not like. Are these issues in your school?

You also mentioned emotionally and behaviorally disturbed. This is a very broad term and covers a whole spectrum of behaviors. Which behaviors are most common? There are a growing number of students in the US that are being labeled along the autism spectrum. Is that true in your schools? In the US, hyperactivity is a very common diagnosis and another one with which I have major issues.

In the US, epilepsy is treated as a medical disorder and I think it is relatively rare that it is treated behaviorally. This is not my area of expertise so any help I give will not be based on experience. Again, diversity is the real issue. There are many kinds of epilepsy and I would not expect that a single treatment will be useful to everyone. You mentioned a child with drug resistant seizures. I will take a look at the monitoring chart and comment if I can.

Comment by Alli on May 26, 2009 at 9:45pm

Hello again Dr Bert

Dyslexia, dyscalculia and ADHD or other hyperactivity disorders are very relevant. Other teachers will also be needing help with autism so it may be useful on the network. In fact I think I will also invite a colleague at another school who is dealing with an autism study at the moment.

I have through reading your response become curious about the development of Special Education as a field for I suspect that there is a cyclical movement which may be worth studying. I will invite some more persons soon. We can get started then.

Comment by Alli on May 26, 2009 at 9:46pm

Sure the entire shot may be even more interesting. Why not let us have a look?

Comment by Alli on May 26, 2009 at 9:47pm

Hi all

A definition of Special Education might be a good place to start.

Comment by Roy on May 27, 2009 at 1:56pm

Hello all:

Good thing going here. I think that all teachers should get some basic idea of special education. At times we encounter some individuals with learning difficulty and cannot even recognize it. Alli, Trinidad is not alone...I believe this is a Caribbean wide problem. At times teachers have to teach students with learning difficulties with no apparent training...this I think is a major social injustice to learners. It would be good to organize a summer workshop on CEN so members can benefit. What do you think?

Comment [GB7]:

Interpreting data
Cross case analysis?
Defining jargon; seeking
data about similar
cases
Narrowing
diagnosis/analysis of case

Comment [GB8]:

Inviting other experts to
clarify issues
Inviting other experts to
clarify Special Ed issues

Comment [GB9]:

Requesting additional data
for analysis

Comment [GB10]:

Defining jargon

Comment [GB11]:

Organizing workshop to
open up an uncharted
issue in the Caribbean

Comment by Bert on May 27, 2009 at 2:18pm

I have done considerable research and remediation with cognitive disabilities. The usual names applied to such disabilities are dyslexia and dyscalculia. I would like to confirm or reject my feeling that the pattern of such problems here is no different from back in NY. If that is the case, I have some very concrete suggestions to help the students with that problem.

Comment [GB12]: Expert advice that opens conversation on an uncharted issue

I know of two basic problems that can lead to learning disability.

The first is that the way we test whether a student has learned or not is not a good way for that student. Have you ever said, "I know that stuff, but I did not score well on the test." Or, "I get nervous in a face to face question session."

I call this performance disability, not learning disability.

The second is that the way we are teaching is not the way they learn and we do not accommodate. I call that teaching disability.

Hyperactivity is a term that has been overused. If a child can sit still and concentrate on a video game but cannot sit still in my classroom, I need to catch his or her attention or possibly set the child multitasking.

Comment by Alli on May 28, 2009 at 2:40am

Is it Dr B. that there are not neurological disorders that lead to learning difficulties. Let us agree that as teachers we do often create I.d. Apart from this aren't there non environmental conditions that are more difficult to deal with? Then I wish to return to the question. What is Special ED?

Comment [GB13]: Seeking answers/clarification

Comment by Bert on May 28, 2009 at 8:12am

Alli, I got sidetracked and starting speaking to a side issue. Let me start by clarifying terms. Special education is what we do for students with special needs. Blind children are taught braille and how to use a voice synthesizer/screen reader. Deaf children are taught sign language and get speech therapy. Children with communication disorders are taught to use communication boards. Retarded children are taught more slowly with an ADL emphasis. And so forth. The problems and solutions have been studied and are understood.

Comment [GB14]: Clarifying terms
Defining jargon/terms (X3)

Now we come to children who are not retarded, have normal sensory abilities, and the usual educational opportunities, but still have problems learning. These are the children who are called learning disabled. Usually the issue is in one particular area such as reading or math and sometimes the children have problems that are hard to pinpoint and are given such labels as auditory processing difficulties.

I am a strong proponent of neuropsychological differences that are the basis of these "learning disabilities". I also consider learning disabilities to be an extreme of learning styles. We all have preferred ways of learning. There are those who learn by rewriting notes or underline or those who learn best by explaining it to someone else or who learn best by re-reading the material. When this preference becomes extreme and the student can not learn in a particular way, the child is called learning disabled. That is, if the way we are teaching is not the way the student learns.

I have some very specific problems and solutions, but rather than biasing you to the problems I encountered in NY, I would like to hear about the actual problems you are encountering. Then I can hypothesize about the neuropsychological causes and suggest solutions.

Comment by Alli on May 28, 2009 at 9:25pm

Hi Dr I will get a couple cases to be studied to you in the short run.
I hope you do not consider it burdensome if I ask whether your viewpoint is that the regular teacher has some responsibility to be able to get every child to succeed even when it is clear that a problem with learning cannot be reasonably made out to originate in the delivery of the curriculum and goes beyond the immediate learning situation.

My student who will learn one tenth of what his peers learn under what may be made out to be good pedagogical conditions, one new word rather than ten and take three weeks rather than one day although parents are trying along with teachers to reach and teach bothers me.

Comment [GB15]: Setting answers for the classroom context

Are physical disabilities (all senses included) and retardation, mild moderate or severe the only considerations for non- pedagogical source of learning problems?
Are all other forms teacher/ teaching/ classroom generated?

Comment by Bert on May 29, 2009 at 7:34am

I will very much be interested in those individual cases. It is not burdensome at all and hope I will not be a burden as I ask more questions. I think the regular teacher has the primary responsibility to help the child learn. It is my contention that the regular teacher can use some simple techniques to help many of the kids labeled LD.

Comment [GB16]: Giving guidance for the classroom context

I cannot say that all problems outside or sensory disabilities or retardation are teacher/classroom generated, but I think most are. I would exclude known cases of brain damage, but even some of these will respond to alternative teaching approaches.

Comment by Alli on May 29, 2009 at 8:56pm

Case of Jaime.doc

Comment [GB17]: Sharing resources

THREAD B

How the Brain Works

* Posted by Gene on May 25, 2009 in The Diversity of Learning

Hi
Recent discussions/readings on diversity of learning makes it clear that teachers have to so much more when planning/delivering lessons.
One other consideration is definitely knowledge of how the brain works. I am recommending a website with an interesting ppt presentation. Please look at it for further discussion.

www.colleton.k12.sc.us/Ttc/CharlesGale/HowBrainLearns.ppt

Comment [GB18]: Clearing group purpose, Sharing resources

Comment by Alli on May 26, 2009 at 9:33pm

Thanks Gene

A bit technical ,necessary, good for a workshop situation with an expert guiding assimilation of the material and implications

Comment [GB19]: Implications for future professional development

Replies to Discussion Reply by Bert on May 27, 2009 at 7:30am

When I was teaching, most of my research program revolved around the brain, especially the differences between the two hemispheres. One of my major concerns, however, is that

Comment [GB20]:
Share research objectives
Share resources
Critiquing resources; offer alternatives
Defining jargon
Teaching the group

these differences have been overstated which has led to fads and anthropomorphism. There was a book entitled "Drawing with the Right Side of the Brain." It actually had some good strategies for improving your drawing but it should have been called something like, "Using Right Hemisphere Strategies to Improve Your Drawing" The actual title is contradictory since most people are right handed and the drawing was controlled by the left hemisphere which controls the right hand.

Slide 10 of the Powerpoint presentation illustrates what I mean by anthropomorphisms. The slide lists the "abilities" of each hemisphere. It speaks of logical, intuitive, organized, etc. But it is the person who is logical, intuitive, organized not a hemisphere. All of our behavior is the result of the integrated functioning of the two hemispheres.

The two hemispheres are different but for the most part use different strategies to accomplish the same tasks. For example, in remembering material a person uses a left hemisphere strategy when he or she repeats the material and a right hemisphere strategy when he or she images the material. If I ask you to image a cat and you see a picture you are using right hemisphere strategies. If you see the letters c-a-t, you are using left hemisphere strategies.

This is a rich topic and I can expound on it for pages. Rather than overwhelming you, let me just end with this closing thought. I said previously that the two hemispheres use different strategies to accomplish the same tasks, but there is one exception to this. One of the earliest finding on brain laterality was that speech production is controlled by the left hemisphere and may be the only cognitive skill that is limited to one hemisphere. This has a profound effect on education and I hope to develop that as we continue to discuss how the brain is organized.

Reply by Bert on May 28, 2009 at 10:26am

Let me give you an exercise to try with your class.

Ask the students to imagine an animal. Let them talk about it and talk about how clear it was. You might get older students to rate the vividness. Now ask whether they imaged with their eyes open or closed. You will find that about half imaged with the eyes open. Now ask them to image with the eyes the opposite way and talk about vividness. The most surprising thing is that half of those who imaged with the eyes open will report a less vivid image with the eyes closed. At least that is what I find in my talks around the US.

Another interesting demonstration is to ask them when a song "goes through your head", who is doing the singing. You should get about half who say the singer and half themselves.

This warm up exercise is to help them answer the task below.

Ask the class to remember the words, dog, cat, tree, table, chair that you say out loud to your class. Ask them to repeat the words and I would expect 100% recall or close to it. Now ask the children if they remembered the words by:

1) repeating them, 2) imaging the pictures of the word, 3) image the letters of the word, 4) hear the words again.

If they repeat the words or see the letters, they are using a left hemisphere strategy.

If they image the animal as a picture or hear the words again, they are using a right hemisphere strategy

I would be most interested in the results you find.

Comment [6821]:
Providing strategies to
test in classroom
Explaining the techniques
Requesting
Feedback/Findings

Appendix 4- Table of Coding decisions

Message	Coder 1 (LeRoy)	Coder 2 (Mille)	Coder 3 (Jean)	Coder 4 (Deem)	Inter-subjective
1	Commendation, Concern for group activity, Interest in topic	Subject for discussion	Requesting information	Applauds group's initiatives. Concerned about particular interests. Invites discussion and suggestions. Shows eagerness to help others based on acquiring new knowledge expertise	Praise group; poses questions for knowledge-building and sharing;
2	Critical dialogue & questioning, Engaging language, Expert knowledge response, Explanation to previous comment, Posing questions, Reflective, Seeking clarification from post, Seeking comment	Elaboration on subject for discussion and request for clarification	Defining jargon	Expert opinion sharing. Open to new ideas and suggestions. Seeking clarity and inviting others to discuss and share. Seeking clarification	Seeking clarification; provide expert knowledge; inviting others in dialogue
3	Critical dialogue and questioning, Interest in topic, Personal referencing and examples, Posing questions, Seeking clarification from post, Seeking comment	Explanation of subject for discussion	Defining jargon Exchanging school experiences Sharing resources Documenting incidents for follow up	Explanation to previous response. Elaboration through personal experience. Sharing knowledge yet open to discussion and comments/suggestions	Explaining previous comment; personal examples from experience; sharing resource
4	Feedback on post, Seeking comment, Share resource	Activity artefacts	Sharing resource	Continuing the discussion by sharing more sources and inviting responses	Sharing resource; inviting responses
5	Critical dialogue and questioning, Feedback on post, Posing question, reflective	Clarification of activity artefact	Analysing data	Discussion and critical feedback on the previous post. Questioned the notions and sought explanations/discussions. Showing passion	Analysing resource; critical response to resource and post.
6	detailed response, feedback on post	Creating analogies of subject	Analysing artefacts/data	An explanation to the previous post. Proving genuineness about the facts presented.	Expert advice response; analysing resource provided

7	Clear and detailed response, Clear language, Confirming of previous comments, Critical dialog and questioning, Engaging language, In-depth instructional comment, Instructional response, Motivating comment, Personal referencing and examples, Reflective, Requesting knowledge sharing and dialogue	seeking clarity of subject, Providing explanations on subject	Interpreting data Cross case analysis? Defining jargon; seeking data about similar cases Narrowing diagnosis/analysis of case	Explanation of point of view. Sensitivity to cultural differences, critical discussion. Explaining and challenging widely held beliefs and notions. Seeking further clarity and explanation in the new areas.	Critical dialogue on subject; further analysis of resource; provide further explanation
8	Concern for group activity, Critical dialogue and questioning, Initiate new topic, Reflective seeking clarification from recent post, Seeking building network links	Subject clarity understood and interests in future discussions	Inviting other experts to clarify issues Inviting other experts to clarify Special Ed issues	Further previous discussion. Invites more ideas, shares personal point of view seeks networking and learning through collaborative activity.	Seek networking and collaborative knowledge –building and sharing; seeking clarification
9	Confirming of previous comment, Encouraging tone, Engaging language, Motivating comment	Further subject clarity	Requesting additional data for analysis	Asks everyone to stop. Suggests cooling off activity to reflect, think and act further	Encourages critical and reflective dialogue; requesting further dialogue.
10	Initiate new topic, Posing question, Requesting knowledge sharing and dialogue, reflective dialogue	Reviewing purpose/activity	Defining jargon	Builds on the topic and provide a summed up punch line to start the discussion again.	Requesting knowledge sharing and dialogue; reflective dialogue
11	Commendation, Concern for group activity, Encouraging tone, Initiate new topic, Reflective, Requesting knowledge sharing and dialogue, Seeking to build new network links	Support for subject	Organizing workshop to open up an uncharted issue in the Caribbean	Acknowledges the need for the topic. Deeper reflection to prove larger scope of the topic. New suggestion to co-learn and benefit from each other's experiences	Reflective dialogue; praise group efforts; reflective dialogue

12	Clear language, Clear and detailed response, Encouraging tone, Engaging language, In-depth response, Instructional response, Personal referencing and examples, Reflective	Restating the subject	Expert advice that opens conversation on uncharted issue	Detailed response. Expert opinion sharing based on personal research in the field. Critical of the current approaches and making expert suggestions	Provide expert advice; provide examples from professional experience; critical dialogue
13	Critical dialogue and questioning, Engaging language, Explanation to previous comment, Posing question, Requesting knowledge sharing and dialogue, Seeking clarification from post, Seeking comment	Reviewing subject	Seeking answers/clarification	Learning and questioning through critical dialogue. Poses new questions and seeks explanations. Open to new ideas. Requesting dialogue	Learning and questioning through critical dialogue;
14	Clear and detailed response, Clear language, In-depth instructional comment, In-depth response, Instructional response, Personal referencing and examples, Requesting knowledge sharing & Dialogue, Seeking comment	Explanation of subject	Clarifying terms Defining jargon/terms (X3)	Provides clarifications, explains, holds personal point of view. Offers help and support. Seeks explanations. Needs deeper understanding before suggesting actions to improve upon.	Provide explanation of previous post; seeking clarification
15	Critical dialogue and questioning, Engaging language, Explanation to previous comment, Seeking comment, Share resource	Subject-related activity	Seeking answers for the classroom context	Poses problem and seeks solutions. Shares personal encounters. Critically discuss the roles and responsibilities of teachers.	Seeking knowledge; sharing personal experience; critical problem posing; seeking knowledge sharing
16	Clear language, Concern for group activity, Instructional response, Interest in topic, Personal referencing and examples, Personal	Further clarification on subject with discussion	Giving guidance for the classroom context	Shows concern for the questions raised. Encourages dialogue and shows interest. Provides clarifications about personal notion.	Provide clarification on discussion; provide examples from experience

	referencing				
17	Seeking comment, Share resource	Sample activity based on subject	Sharing resource.	Sharing and seeking responses.	Sharing resource; seeking response
18	Inviting, Welcoming, Motivating comment, Requesting knowledge sharing & dialogue, Seeking comment, Sharing resource	Purpose for activity, Activity-PowerPoint for discussion	Clear group purpose, sharing resource	Shows theoretical assumptions of the researcher. Prompts for co-constructing knowledge through sharing and discussion are provided. The activity involved searching a website, looking at the power point. Invitation, assimilating, commenting, reacting and sharing appeared key underlying processes.	Give clear purpose for activity; sharing resource for co-construction of knowledge.
19	Critical dialogue and questioning Requesting knowledge sharing & dialogue	Explanation accepted	Implications for future professional development	Seeks further explanation and clarity. Shows keenness to learn and appreciates more guided approach	Requesting further explanation on subject
20	Clear and detailed response, Clear language, Expert knowledge response, In-depth instructional comment, In-depth response, Instructional response, Personal referencing and examples, Provide practical examples, Request knowledge sharing & dialogue	Contextualizing activity based on own opinion/knowledge/experience, Elaboration on contextualized activity, Summarization on contextualized activity	Share research objectives Share resources Critiquing resources; offer alternatives Defining jargon Teaching the group	Detailed and rich response. Engaging with the activity and reacting with the information received. Provided detailed arguments and real life examples with a personal point of view. Demonstrates need to continue the discussion and open to new ideas	Share resource; detailed response based with professional and real life examples;
21	Clear and detailed response, clear language, Expert knowledge response, in-depth response, Personal referencing and examples, Requesting knowledge	Sub-activity based on previous purpose, Further elaboration of previous activity, Another sub-activity based on previous	Providing strategies to test in classroom Explaining the	Detailed response with a real life example. Poses a question to test/confirm notions about the activity of brain. Requesting to act and reflect. Emphasises experiential learning.	detailed response based with professional and real life examples; poses question for reflection and knowledge-sharing






	sharing & dialogue	purpose/discussion	techniques Requesting feedback/findings		
--	--------------------	--------------------	---	--	--

Appendix 5- Cycle 4 Coding for processes and presences

Date: 02/24/2011

P 1: coding_Cycle 4_processes.rtf

Page: 1/7

001	<u>The Diversity of Learning - A GROUP Coder 3</u>	 Clear Group Purpose
002	The purpose of this group is to accommodate the special needs of individuals. It applies equally to the blind and deaf, the autism and learning disability, and learning styles. Members: 8 Latest Activity: Mar 19	
003		
004	<u>THREAD A</u>	
005	Comment by Alli on May 22, 2009 at 7:45pm	
006	Hello all	 Greeting - COP
007	The CEN has crossed another frontier with this group. Special Education expertise is rare in Trinidad and perhaps in the region as a whole. I hope we all benefit.	 Evaluation - CGP
008		
009	I am particularly interested at this moment in any information on epilepsy and EBD that can help teachers at the secondary level.	 Requesting Knowledge
010		
011	Hope to get help or suggestions soon.	 Requesting Knowledge
012		
013	Comment by Bert on May 23, 2009 at 7:40am	
014	Alli,	 Refer by name - CO
015	Epilepsy is more of a medical issue and usually can be controlled by medication. We can discuss the problem, but little we can do than how to react during a seizure episode. I am not sure I know the meaning of the term EBD. I am guessing that BD stands for Brain Damage. Can you clarify?	 Sharing knowledge  Agree to discuss  Evaluation - CGP
016		 Asking question -
017	Comment by Alli on May 23, 2009 at 2:09pm	
018	Hi By EBD I mean emotionally and behaviorally disturbed. I am full curious about your statement on epilepsy since a self managed episode told me that medication is not the way to go rather it is more useful to document and try to work out the trigger for the seizure: have a student at my school and his seizures are becoming more frequent so that the staff is very concerned and students who assist their classmate are losing contact time. He has been on medication five years. I am uploading the form I devised and asked the teacher use. The parents are willing to document as well but I am not sure where it will go. No one knows what to do but we have begun to document.	 Requesting Knowledge  Share personal experience
019		
020	Comment by Alli on May 23, 2009 at 2:14pm	
021	recording chart.doc Epilepsy monitoring chart	 Sharing resource - A
022		
023	Comment by Alli on May 23, 2009 at 6:10pm	
024	This is a very interesting photo. Female, aged, obviously not a dominating ethnicity, not a westerner? Diversity?	 Complementing -  Evaluation - CGP
025		
026	Comment by Bert on May 24 2009	
027	The photo has an interesting story. I was visiting the Taj Mahal in when I saw a mother and child with the older woman and I asked could take a picture of the two. They agreed and when I showed t	 Making reference




the result on the camera all three looked and enjoyed. Then the grandmother (I am assuming) gestured to take her picture also and see the result. But when I wanted to show her the picture in the camera, she did not want to look. She would allow her own picture be taken and could look at the picture of others, but not her own picture. There is much more detail in the original that I had to res. so it would be small enough to use. If you are interested in a copy the original I will post it.

 offering to share i

028

029 **Comment by Bert on May 24, 2009 at 8:29am**

030 Ali, you have made a few comments and I want to share my idea: of the major problems is that terms like learning disability or emotionally disturbed are vague and I like to look at the diverse behaviors that fall under these terms. This is true within New York much more across the whole US. I expect there will be even more differences if you move to different countries and cultures.

 Agree to discuss:
 Criticism - CGP
 Knowledge shar

031

032 First of all, my major expertise is in cognitive learning disability. For example, a child of at least average intelligence who cannot read, not like the term, but it is often called dyslexia. There is also math disability -- dyscalculia, another term I do not like. Are these issues your school?

 Asking question

033

034 You also mentioned emotionally and behaviorally disturbed. This is very broad term and covers a whole spectrum of behaviors. Which behaviors are most common? There are a growing number of students in the US that are being labeled along the autism spectrum. Is that in your schools? In the US, hyperactivity is a very common diagnosis and another one with which I have major issues.

 Asking question

035

036 In the US, epilepsy is treated as a medical disorder and I think it is relatively rare that it is treated behaviorally. This is not my area of expertise so any help I give will not be based on experience. A fair diversity is the real issue. There are many kinds of epilepsy and I not expect that a single treatment will be useful to everyone. You mentioned a child with drug resistant seizures. I will take a look at monitoring chart and comment if I can.





037

038

039 **Comment by Ali on May 26, 2009 at 9:45pm**




040 Hello again Dr Bert

041 Dyslexia, dyscalculia and ADHD or other hyperactivity disorders are very relevant. Other teachers will also be needing help with autism may be useful on the network. In fact I think I will also invite a colleague at another school who is dealing with an autism study at moment.

 Refer by name - CO
 Requesting Know
 Response to prev
 Requesting Know

042

043 I have through reading your response become curious about the development of Special Education as a field for I suspect that there is a cyclical movement which may be worth studying. I will invite some

 Acknowledging unc
 Agree to discuss fur
 Shows interest in gr


more persons soon. We can get started then.

044
045 **Comment by Alli on May 26, 2009 at 9:46pm**
046 Sure the entire shot may be even more interesting. Why not let us
a look?
047
048
049 **Comment by Alli on May 26, 2009 at 9:47pm**
050 Hi all
051 A definition of Special Education might be a good place to start.
052
053 **Comment by Roy on May 27, 2009 at 1:56pm**
054 Hello all:
055 Good thing going here. I think that all teachers should get some b
idea of special education. At times we encounter some individuals
learning difficulty and cannot even recognize it. Alli, Trinidad is no
alone...I believe this is a Caribbean wide problem. At times teache
have to teach students with learning difficulties with no apparent
training...this I think is a major social injustice to learners. It woul
good to organize a summer workshop on CEN so members can be
What do you think?
056
057
058
059
060
061 **Comment by Bert on May 27, 2009 at 2:18pm**
062 I have done considerable research and remediation with cognitive
disabilities. The usual names applied to such disabilities are dyslex
and dyscalculia. I would like to confirm or reject my feeling that th
pattern of such problems here is no different from back in NY. If th
the case, I have some very concrete suggestions to help the stude
with that problem.
063
064 I know of two basic problems that can lead to learning disability.
065
066 The first is that the way we test whether a student has learned or
not a good way for that student. Have you ever said, "I know that
but I did not score well on the test." Or, "I get nervous in a face to
question session."
067 I call this performance disability, not learning disability.
068
069 The second is that the way we are teaching is not the way they lea
and we do not accommodate. I call that teaching disability.
070
071 Hyperactivity is a term that has been overused. If a child can sit s
and concentrate on a video game but cannot sit still in my classroo
need to catch his or her attention or possibly set the child multitas
072
073 **Comment by Alli on May 28, 2009 at 2:40am**

- 074 Is it Dr B. that there are not neurological disorders that lead to learning difficulties. Let us agree that as teachers we do often create I.d. And from this aren't there non environmental conditions that are more difficult to deal with? Then I wish to return to the question. What is Special ED?
- 075
- 076 **Comment by Bert on May 28, 2009 at 8:12am**
- 077 Alli, I got sidetracked and starting speaking to a side issue. Let me try to clarify terms. Special education is what we do for students with special needs. Blind children are taught braille and how to use a voice synthesizer/screen reader. Deaf children are taught sign language and get speech therapy. Children with communication disorders are taught to use communication boards. Retarded children are taught more with an ADL emphasis. And so forth. The problems and solutions have been studied and are understood.
- 078
- 079 Now we come to children who are not retarded, have normal sensibilities, and the usual educational opportunities, but still have problems learning. These are the children who are called learning disabled. Usually the issue is in one particular area such as reading math and sometimes the children have problems that are hard to pinpoint and are given such labels as auditory processing difficulties.
- 080
- 081 I am a strong proponent of neuropsychological differences that are the basis of these "learning disabilities". I also consider learning disabilities to be an extreme of learning styles. We all have preferred ways of learning. There are those who learn by rewriting notes or underlining those who learn best by explaining it to someone else or who learn by re-reading the material. When this preference becomes extreme the student can not learn in a particular way, the child is called learning disabled. That is, if the way we are teaching is not the way the student learns.
- 082
- 083 I have some very specific problems and solutions, but rather than biasing you to the problems I encountered in NY, I would like to hear about the actual problems you are encountering. Then I can hypothesize about the neuropsychological causes and suggest solutions.
- 084
- 085 **Comment by Alli on May 28, 2009 at 9:25pm**
- 086 Hi Dr I will get a couple cases to be studied to you in the short run.
- 087 I hope you do not consider it burdensome if I ask whether your viewpoint is that the regular teacher has some responsibility to be able to get every child to succeed even when it is clear that a problem with learning cannot be reasonably made out to originate in the delivery of the curriculum and goes beyond the immediate learning situation.
- 088
- 089 My student who will learn one tenth of what his peers learn under the best of circumstances may be made out to be good pedagogical conditions, one new word rather than ten and take three weeks rather than one day although parents are trying along with teachers to reach and teach bothers

- 090
- 091 Are physical disabilities (all senses included) and retardation, mild or moderate or severe the only considerations for non- pedagogical s of learning problems?
- 092 Are all other forms teacher/ teaching/ classroom generated?
- 093
- 094
- 095
- 096 **Comment by Bert on May 29, 2009 at 7:34am**
- 097 I will very much be interested in those individual cases. It is not burdensome at all and hope I will not be a burden as I ask more questions. I think the regular teacher has the primary responsibility to help the child learn. It is my contention that the regular teacher can use some simple techniques to help many of the kids labeled LD.
- 098
- 099 I cannot say that all problems outside of sensory disabilities or retardation are teacher/classroom generated, but I think most are. I would exclude known cases of brain damage, but even some of those will respond to alternative teaching approaches.
- 100
- 101 **Comment by Alli on May 29, 2009 at 8:56pm**
- 102
- 103 Case of Jaime.doc
- 104
- 105
- 106
- 107 **THREAD B**
- 108 **How the Brain Works**
- 109 *** Posted by Gene on May 25, 2009 in The Diversity of Learning**
- 110
- 111 Hi
- 112 Recent discussions/readings on diversity of learning makes it clear that teachers have to do much more when planning/delivering lessons.
- 113 One other consideration is definitely knowledge of how the brain works. I am recommending a website with an interesting ppt presentation. Please look at it for further discussion.
- 114
- 115 www.colleton.k12.sc.us/Ttc/CharlesGale/HowBrainLearns.ppt
- 116
- 117 **Comment by Alli on May 26, 2009 at 9:33pm**
- 118 Thanks Gene
- 119 A bit technical ,necessary, good for a workshop situation with an emphasis on guiding assimilation of the material and implications
- 120
- 121 **Replies to Discussion Reply by Bert on May 27, 2009 at 7:30am**
- 122
- 123 When I was teaching, most of my research program revolved

around the brain, especially the differences between the two hemispheres. One of my major concerns, however, is that these differences have been overstated which has led to fads and anthropomorphism. There was a book entitled "Drawing with the Right Side of the Brain." It actually had some good strategies for improving your drawing but it should have been called something like, "Using Right Hemisphere Strategies to Improve Your Drawing" The actual title is contradictory since most people are right handed and the drawing was controlled by the left hemisphere which controls the right hand.

 Making reference to

124

125 Slide 10 of the Powerpoint presentation illustrates what I mean by anthropomorphism. The slide lists the "abilities" of each hemisphere. It speaks of logical, intuitive, organized, etc. But it is the person who is logical, intuitive, organized not a hemisphere. All of our behavior is the result of the integrated functioning of the two hemispheres.

 Explaining content

126

127 The two hemispheres are different but for the most part use different strategies to accomplish the same tasks. For example, in remembering material a person uses a left hemisphere strategy when he or she repeats the material and a right hemisphere strategy when he or she images the material. If I ask you to image a cat and you see a picture you are using right hemisphere strategies. If you see the letters c-a-t, you are using left hemisphere strategies.

 Explaining content

128

129 This is a rich topic and I can expound on it for pages. Rather than overwhelming you, let me just end with this closing thought. I said previously that the two hemispheres use different strategies to accomplish the same tasks, but there is one exception to this. One of the earliest finding on brain laterality was that speech production is controlled by the left hemisphere and may be the only cognitive skill that is limited to one hemisphere. This has a profound effect on education and I hope to develop that as we continue to discuss how the brain is organized.

 Concern for mem

130

131

132 **Reply by Bert on May 28, 2009 at 10:26am**



133

134 Let me give you an exercise to try with your class.

 Initiating activity

135

136 Ask the students to imagine an animal. Let them talk about it and talk about how clear it was. You might get older students to rate the vividness. Now ask whether they imaged with their eyes open or closed. You will find that about half imaged with the eyes open. Now ask them to image with the eyes the opposite way and talk about vividness. The most surprising thing is that half of those who imaged with the eyes open will report a less vivid image with the eyes closed. At least that is what I find in my

 Initiating activity
 Sharing resource

talks around the US.

137

138 Another interesting demonstration is to ask them when a song
"goes through your head", who is doing the singing. You should
get about half who say the singer and half themselves.

139

140 This warm up exercise is to help them answer the task below.

141

142 Ask the class to remember the words, dog, cat, tree, table, chair
that you say out loud to your class. Ask them to repeat the words
and I would expect 100% recall or close to it. Now ask the
children if they remembered the words by:

143

144 1) repeating them, 2) imaging the pictures of the word, 3) image
the letters of the word, 4) hear the words again.

145

146 If they repeat the words or see the letters, they are using a left
hemisphere strategy.

147 If they image the animal as a picture or hear the words again,
they are using a right hemisphere strategy

148

149 I would be most interested in the results you find.

Appendix 6 - Mapping The Two Approaches.

Unit	Group coding (processes)	recoding (processes)	Map to themes (presences)
1	Praise group; poses questions for knowledge-building and sharing	Clear Group Purpose; Greeting, Evaluation; Requesting Knowledge-Sharing;	MOP, COP, CGP, CGP
2	Seeking clarification; provide expert knowledge; inviting others in dialogue	Refer by name; agree to discuss further; Sharing knowledge; Share personal experience; asking question; Evaluation	COP, CGP, COP,
3	Explaining previous comment; personal examples from experience; sharing resource	Requesting knowledge-sharing; response to previous request; share personal experience	CGP
4	Sharing resource; inviting responses	Sharing resource	ARP
5	Analysing resource; critical response to resource and post	Complementing; making inferences; Evaluation	COP, CGP
6	Expert advice response; analysing resource provided	Making reference to experience; offering to share resource	CGP, ARP
7	Critical dialogue on subject; further analysis of resource; provide further explanation	Agree to discuss further; response to previous request; criticism; refer by name; sharing knowledge	COP, CGP
8	Seek networking and collaborative knowledge –building and sharing; seeking clarification	Refer by name; request knowledge-sharing; response to previous request; agree to discuss further; shows interest in group	COP, CGP
9	Encourages critical and reflective dialogue; requesting further dialogue	Asking question; requesting knowledge-sharing	COP, CGP
10	Requesting knowledge sharing and dialogue; reflective dialogue	Requesting knowledge-sharing; initiating themes for discussion; greeting group	CGP, MOP, COP
11	Reflective dialogue; praise group efforts;	Greeting; Shares opinion; complementing; refer by name; design suggestion; asking question	COP, CGP, MOP
12	Provide expert advice; provide examples from professional experience; critical dialogue	Sharing knowledge; making inferences; criticism; evaluation	CGP
13	Learning and questioning through critical dialogue	Asking question; refer by name	CGP, COP
14	Provide explanation of previous post; seeking clarification	Making value statement; refer by name; response to previous request; sharing knowledge; expressing value for context; making reference to experience; requesting knowledge-sharing	CGP, COP
15	Seeking knowledge; sharing personal experience; critical problem posing; seeking knowledge	Agree to discuss further; evaluation; requesting knowledge sharing; share personal	COP, CGP

	sharing	experience; asking question	
16	Provide clarification on discussion; provide examples from experience	Asking question; expressing value for context; agree to discuss further; shows interest in group; shares opinion; sharing knowledge	COP, CGP
17	Sharing resource; seeking response	Sharing resource	ARP
18	Give clear purpose for activity; sharing resource for co-construction of knowledge	Asking question; initiating themes for discussion; requesting knowledge sharing; sharing resource	CGP, MOP, ARP
19	Requesting further explanation on subject	Refer by name; design suggestion; evaluation	COP, MOP, CGP
20	Share resource; detailed response based with professional and real life examples;	Sharing knowledge; making inferences; explaining context; concern for member; evaluation	CGP, COP
21	Detailed response based with professional and real life examples; poses question for reflection and knowledge-sharing	Initiation activity; sharing resource	MOP, ARP

Appendix 7 – Frequency Codes Synchronous meeting Nov. 28 2009 (cycle 3)

Code	Count
Reflective statement or comment	23
Design suggestions	22
response to item raised	14
soliciting response	12
Asking question	11
Technological Tool reference	10
Seeking clarity	9
critical response to argument	6
confirming network objective	5
Negotiating time	5
clarifying role	4
disagreement on previous theme	4
flexible framework	4
Introduction	4
evaluation of session	3
pushing personal objective	3
recognition of group objective	3
tension with objective	3
Acknowledging design suggestion	2
commitment	2
design metaphor	2
expanding explanation	2
generating activity	2
mention of resource	2
items from previous session	1
Review last session	1
role definition	1
shared responsibility	1
volunteer	1
Welcome	1

Appendix 8 – Average Coding after coding 3 times (Cycle 2)

CODE	Frequency (AVG)
Seeking comment	16
Requesting knowledge sharing & Dialogue	14
Critical dialogue and questioning	14
Reflective statement	11
Personal referencing and examples	11
Share resource	8
Posing questions	7
Commendation	7
Personal referencing	6
Motivating comment	6
provide feedback on resource and comment	6
Recommend resource	6
Story from experience	5
Encouraging tone	5
Engaging language	5
Feedback on post	5
Initiate new topic	5
expert knowledge response	5
Clear and detailed response	4
Clear language	4
Interest in topic	4
Seeking to build network links	4
Explanation to previous comment	4
In-depth instructional response	4
Instructional response	3
seeking clarification	3
Stimulus material	3
Confirming previous comment	3
Inviting, welcoming	3
Provide practical examples	3
Concern for group activity	3
In-depth response	3
Strong judgement	1
Activity	1
respectful;	1
Humour	1
Interest to invite new colleagues	1