AN INQUIRY INTO LEARNING IN RURAL COMMUNITY INFORMATICS: UNDERSTANDING, FACILITATING AND ACCOUNTING FOR LEARNING IN THE GRANITENET PROJECT

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<u>Abstract</u>

GraniteNet is a Community Informatics and Learning Community initiative that began in 2006 as a collaboration between USQ researchers and members of the rural community of Stanthorpe, a small town located in the Southern Downs region of Queensland, Australia. The project's vision was the development of a sustainable community-designed, owned and managed web portal that would promote digital inclusion and support Stanthorpe's development as a Learning Community. Emerging Education practice problems related to this researcher's desire to better understand the nature and dynamics of people's informal, community learning in this context led her to focus her doctoral study on an investigation into learning in GraniteNet.

Using phenomenography as the primary research approach within GraniteNet conceptualised as a single site instrumental case study, the study investigates the qualitatively different ways in which GraniteNet participants perceive and experience learning within the context of their community volunteering work. The experience of learning across various content domains is explored with a purposive sample of 20 community volunteers drawn from among GraniteNet's diverse communities and networks of interest and practice. Particular emphasis is given to interrogating conceptions and experiences of learning about and learning to use digital technologies in GraniteNet's face-to-face, virtual and hybrid community learning and working environments.

Seven qualitatively distinct, yet logically related ways of experiencing learning in GraniteNet constitute the study's phenomenographic outcome space. These results are then interpreted in the context of the case study report to illuminate the experience of informal community learning in GraniteNet and to theorise about the nature and dynamics of this learning. As part of the elaboration of respondents' conceptions of learning, reference is made to seven interrelated domains of learning content and their related learning processes and also to conditions for learning afforded by GraniteNet as the learning context and environment. A typology of learning grounded in the phenomenographic findings theorises the nature of individual and collective informal learning in GraniteNet and in so doing, contributes to emerging understandings of learning that enable us to "think more creatively and

productively about learning in all of its manifestations" (Hager, 2004, p. 15), including how people learn about their own and others' learning.

The findings thus contribute to knowledge in a number of areas of interest to researchers and practitioners in the fields of Adult Education and Lifelong Learning, Community Informatics and Community Development, with new insights generated about the diverse forms of learning in which people engage as they use digital technologies to learn with and from each other in the context of Australian rural community and associational life in the digital era. Firstly, the findings show how the significant educational effect of people's participation in rural community associational life is magnified for the digital era by a learning-based approach to Community Informatics. This knowledge will enable Adult Education and Community Development scholar-practitioners working in comparable settings to make more informed decisions about how to use digital technologies effectively for individual, organisational and community learning and development. Secondly, a comparison of the study's findings with conceptions of learning in selected phenomenographic studies contributes to our understanding of informal learning from the learner's perspective, confirming the enduring relevance of phenomenography to theorising about the nature of adults' everyday learning in the digital era. Thirdly, the study's contribution to methodological knowledge is related to particular techniques and instruments that can be used to investigate the so-called 'submerged iceberg' of informal adult learning. Recommendations for policy, practice and further research emerging from the study include a philosophical and conceptual framework for a learning-based approach to Community Informatics with implications for adult community educators' roles and purposes, and concomitantly, for the further education of adult educators and community development practitioners.

Certification Page

This thesis is entirely the work of Catherine Arden except where otherwise acknowledged. The work is original and has not previously been submitted for any other award, except where acknowledged.

Student's and supervisors' signatures of endorsement are held at USQ.

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Note on capitalisation of fields of study: Academic disciplines such as Cultural Anthropology, Education and Information Sciences, along with their related fields of study such as Adult Education, Lifelong Learning and Community Informatics, are capitalised throughout, as is the descriptor Learning Community, referring to a geographical learning community established as part of the Learning Communities movement. Terms such as 'adult learning', 'lifelong learning' and 'community learning' used to refer to areas of scholarship and/or practice and their related knowledge domains are formatted in lower case, as are the constructs 'knowledge society', 'network society', 'information society' and 'learning society'.

<u>List of publications related to the study</u>

The following publications have been generated as a result of this doctoral study.

Arden, C. H. (2010). Learning in Community Informatics: Understanding, facilitating and accounting for learning in the GraniteNet project. *CIRN 2009: Empowering communities: learning from community informatics practice. 4-6 November.* Prato: Monash University. Retrieved from <u>http://ccnr.infotech.monash.edu/conferences-workshops/prato2009</u> papers.html

Arden, C. H. (2014). Re-engineering education research to investigate learning in Community Informatics: Using phenomenography and variation theory to understand and account for learning in GraniteNet. *Challenges and Solutions 11th Prato CIRN Conference 2014, October 13-15 Refereed paper.* Prato: Faculty of IT Monash University.

Midgley, W., Arden, C. H., & Matthews, K. M. (2014). Information communication technologies. In M. Baguley, P. Danaher, A. Davies, L. De-George-Wallker, J. K. Jones, K. Mathews, C. H. Arden (Eds.), *Educational learning and development: Building and enhancing capacity.* (pp. 67-82). London: Palgrave Macmillan.

The following publications sole- and co-authored by this researcher contribute to the GraniteNet case study, reported in Chapter 5.

Arden, C. H. (2009). *GraniteNet Phase 2 Evaluation Report.* Unpublished, University of Southern Queensland, Centre for Research in Transformative Pedagogies, Toowoomba. Retrieved from http://granitenet.com.au/about/project

Arden, C. H., & McLachlan, K. (2014). A small town with big ideas: Stories of GraniteNet. In G. D. Postle, L. J. Burton, & P. Danaher (Eds.), *Community capacity building: Lessons from adult learning in Australia.* (pp. 160-176). UK: NIACE .

Arden, C. H., Cooper, T., & McLachlan, K. (2007). Evaluating community engagement: Lessons for an Australian regional university. *Australasian Journal of University Community Engagement, 2*(2), 18-27. Retrieved from http://www.engagementaustralia.org.au/uploads/vol2_no2_2007.pdf

Arden, C. H., Cooper, T., McLachlan, K., & Stebbings, S. (2008). A learning community two years on: Reflecting on successes and framing futures. *5th International Lifelong Learning Conference 2008* (pp. 246-252). Yeppoon: Central Queensland University.

Arden, C. H., McLachlan, K., & Cooper, T. (2008). Building capacity through sustainable engagement: More lessons for the learning community from the GraniteNet project. *Australian Learning Communities Network Conference, October 26-28.* Adelaide.

Arden, C. H., McLachlan, K., & Cooper, T. (2009). Building capacity through sustainable engagement: More lessons for the learning community from the GraniteNet project. *Australian Journal of Adult Learning, 4*(1), 78-101.

Arden, C. H., McLachlan, K., & Cooper, T. (2010). Flying blind, or going with the flow? Using constructivist evaluation to manage the unexpected in the GraniteNet project. *Journal of Community Informatics Special Issue: Prato Community Informatics Conference 2010, 6*(3). Retrieved from http://ci-journal.net/index.php/ciej/issue/view/34

McLachlan, K., & Arden, C. H. (2009). Community learning projects: Transforming post-compulsory education provision in rural communities. (R. E. Harreveld, G. R. Danaher, & P. Danaher, Eds.) *Theme issue Rural Society. Sea changes and bush lessons :Post compulsory education and rural renewal., 19*(2), 146-162. doi:10.5172/rsj.19.2.146

Other publications co-authored by this researcher related to the GraniteNet Project include.

Arden, C., Danaher, P., & Midgley, W. (2014). Regionalitiy, rurality and capacity building. In P. Danaher, A. Davies, L. De George-Walker, J. Jones, K. Matthews, W. Midgley, M. Baguley (Eds.), *Contemporary capacity—building in educational contexts.* (pp. 99-112). London: Palgrave McMillan.

Baguley, M., Davies, A., & Arden, C. H. (2014). Leadership. In M. Baguley, P. A. Danaher, L. De George-Walker, A. Davies, J. K. Jones, K. Matthews, . . . C. H. Arden (Eds.), *Educational learning and development: Building and enhancing capacity.* (pp. 83-97). Hampshire, UK: Palgrave Macmillan.

De George-Walker, L., Arden, C., & Matthews, K. (2014). Resilience and capacity-building. In P. A. Danaher, A. Davies, L. De George-Walker, J. K. Jones, K. J. Matthews, W. Midgley, . . . M. Baguley (Eds.), *Contemporary Capacity Building in Educational Contexts* (pp. 113-125). Hampshire, UK: Palgrave Macmillan.

Jones, J. K., Arden, C. H., & Midgley, W. (2014). Disrupting disempowerment: Agency in education. In *Contemporary capacity building in educational contexts.* (pp. 73-89). Hampshire, UK: Palgrave Macmillan.

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Chapter 1.
Introduction to the Study: An Inquiry into Learning in Rural Community Informatics

> All of those committed to the principles of lifelong learning and the democratic development of the emergent information age…should be interested in further exploration of the still largely hidden informal dimensions of the iceberg of adult learning (Livingstone, 2001).

1.1.   Introduction

This study is an inquiry into human learning within a particular social context; it is therefore a form of social science research belonging to studies in Education (Somekh & Lewin, 2005; Walker & Evers, 1988). The context in which learning is investigated is GraniteNet—an Australian rural Community Informatics[1] initiative, situated in a small, rural town in South East Queensland, Australia. The learning environment for the study is both physical and virtual, comprised of a volunteer-operated community technology centre and the locally hosted and managed GraniteNet community web portal (www.granitenet.com.au). The learners in this context are younger and older adults participating as community volunteers in the management, delivery and use of GraniteNet's community technology services, including the community web portal. The study investigates these community volunteers' informal learning experiences in the context of their involvement in GraniteNet's physical and virtual activities.

This chapter introduces and presents the rationale for the study, contextualising the research historically, geographically and in terms of its knowledge interest. The researcher is situated professionally and historically in the context of the GraniteNet project as an adult educator and Adult Education researcher and thepractice problems, from whence the impetus for the study and its research questions emerged, are described. Important terms and concepts used throughout the thesis are introduced and

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[1]   Community Informatics is an emerging, cross-disciplinary field of research and practice concerned with how digital information and communications technologies and the internet are leveraged in the interests of local community development (Gurstein, 2001; Haythornthwaite & Kendall, 2010; Loader & Keeble, 2004).

defined, the research objectives and methodology outlined and anticipated contributions to knowledge in the fields of Adult Education, Lifelong Learning and, specifically, learning in associational life, community volunteer work and rural Community Informatics are highlighted. The chapter concludes with an overview of the structure and contents of the eight chapters constituting the thesis.

1.2.   Background to the GraniteNet Project

GraniteNet is a Community Informatics project and Learning Community[2] initiative that began in 2006 as a result of the efforts of a small but dedicated group of local residents of the rural[3] town of Stanthorpe in South-East Queensland, Australia who had identified the potential of digital Information and Communications Technologies, or ICTs[4], for promoting lifelong learning[5] initiatives in their community. A research and development partnership was subsequently formed in 2006 with a small cross-disciplinary team of researchers (including this researcher), teaching faculty and administrators from the nearby regional university (the University of Southern Queensland) led by the university's then Chief Technology Officer. The project had as its vision the establishment of a sustainable, community designed, owned and managed web portal that would support Stanthorpe's development as a Learning Community (Arden, McLachlan & Cooper, 2009). The ensuing four years saw the evolution of GraniteNet via the implementation of three cycles of Participatory Action Research and Evaluation (PAR&E) (Foote Whyte, 1991;Wadsworth, 1997, 1998) in collaboration with the university, including the establishment of a steering committee that would later become the community-based organisation, GraniteNet Incorporated, the development of the community web portal and the opening in 2009

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[2]   A Learning Community is a geographical learning community (in this case, a town) that "explicitly adopts a learning-based approach to community development with a framework in which lifelong learning is the organising principle and social goal" (Faris, 2005, p. 31).

[3]   The town of Stanthorpe is defined as rural for the purposes of national statistics (ABS, 2013a). The question of rurality is discussed further with reference to implications for this study in the case study description in Chapter 5.

[4]   In this study, the descriptors Information and Communication Technologies (ICTs) and digital technologies are used to refer to personal digital information and communications technologies common in everyday use including personal computers of various kinds, mobile technologies and the Internet.

[5]   The researcher's interpretation of lifelong learning for the purposes of this study is outlined in Section 1.5 and elaborated in Chapter 2.

of the GraniteNet community technology hub premises in the town's central business district.

This doctoral study was conducted between 2011 and 2013 and occurred at a high point in GraniteNet's development characterised by strong community participation across all of GraniteNet's areas of operation, as the case study report in Chapter 5 explains. Just over a decade on from the commencement of the GraniteNet PAR&E project and five years since completion of the third and final action research cycle in 2010, GraniteNet continues to evolve as a community-based social enterprise[6], operated exclusively by volunteers who provide a range of digital inclusion[7] facilities and services to residents of Stanthorpe and the Granite Belt[8] A detailed history of GraniteNet's development between 2006 and 2013 is provided as part of the case study description in Chapter 5, and draws on a number of sole and co-authored publications emanating from the GraniteNet PAR&E project between 2006 and 2014[9].

1.3.   Investigating Learning in GraniteNet

As a community organisation and social enterprise with a digital inclusion mission and a vision to promote lifelong learning, GraniteNet was identified by this researcher as potentially affording a rich case study of informal adult learning in the context of local community development in the digital era[10] and, as such, a suitable focus for her doctoral studies in Education. The Adult Education "practice problems"[11]

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[6]   A social enterprise is defined as a "hybrid organisational form" that "combine[s] characteristics of for-profit businesses and community organisations" (Eversole, Barraket & Luke, 2013, p. 1).
[7]   Digital inclusion refers to the aim of "creating an informed society by including the digitally excluded"; however, more than "just a matter of being connected to the technology", digital inclusion is about providing "a path to full participation in a digital society" (Alamelu, 2013, p. 229).
[8]   The Granite Belt is the official name of the geographical area in which Stanthorpe is located, and refers to the geological composition of the area as a section of the Great Dividing Range that runs the length of Australia's eastern seaboard, located close to the border between the States of Queensland and New South Wales (refer to the maps in the case study report in Chapter 5).
[9]   Sole and co-authored publications by this researcher and her co-researchers generated from the GraniteNet PAR&E project between 2006 and 2014 are listed in the front matter, and include those that have contributed to the case study description in Chapter 5.
[10]   For the purposes of this study, the term 'digital era' is used to refer to "a time period in which digitised experiences are increasing…thus changing how living and working in rural areas are experienced on a day-to-day basis" (Rusten & Skerratt, 2008, p. 5).
[11]   Usher (1987) describes "practice problems" in the context of Adult Education research as educational problems arising from the practice of adult education that cannot be resolved "by merely applying theory which originates outside educational practice" but through an "iterative process of questioning whereby the practitioner develops a deeper understanding…of the (changing)

(Usher, 1987, p. 86) of particular interest to this adult educator and researcher were embedded within this context and emerged from her involvement in the GraniteNet project during the period 2006-2009, both as lead PAR&E researcher and as a broker (Loechel & Kilpatrick, 2004) between the local community and the university. These practice problems were formulated as follows:

- How is lifelong learning fostered, promoted and facilitated in a small, rural Australian community through a Community Informatics project such as GraniteNet?
- How can ICTs be used to support community learning (and, conversely, how can community learning support the development of digital literacy)?

On the decision being taken to investigate these practice problems in the context of GraniteNet, this researcher progressively withdrew from active involvement in supporting the organisation's activities to commence her arm's length inquiry into learning in GraniteNet by seeking to understand participants' experiences of learning from their own perspectives. The position, orientation, attitude and role of the researcher in this study are explained as part of the presentation of the research design, conceptual framework and methodology in Chapters 3 and 4. Emphasis is placed on the importance for the study of researcher reflexivity, interpretive awareness and. an open-mindedness as to what might emerge from the research, constituting the "learning attitude" considered essential for effective social science research (Marton & Booth, 1997; Rogoff, 2003, p. 24; Stake, 1995, 2005).

The objective of the research being an inquiry into learning as experienced by individuals in the context of their involvement in GraniteNet and their use of the community portal, phenomenography—as an approach to investigating learning from the learner's perspective (Marton, 1988; Marton & Booth, 1997)—was adopted for the purposes of formulating the research questions and devising the conceptual and analytical frameworks for the study.

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conditions of practice and of the (changing) relevance of different theories to these conditions" (pp. 63, 86, 91).

The first research question (RQ1) focused on investigation of respondents' conceptions and experiences of learning in GraniteNet as a Learning Community project:

> *What are the qualitatively different ways that learning is perceived and experienced by GraniteNet participants in the context of their participation in, and use of, GraniteNet*?

As the study is an inquiry into learning in the context of rural Community Informatics, conceptions and experiences of learning that are directly related to and influenced by people's engagement with digital communications technologies are considered to be of particular interest, calling for a focus on learning specifically related to these technologies. This is articulated in a second research question (RQ2):

> *What are the qualitatively different ways GraniteNet participants and portal users experience using, and learning to use, ICTs?*

A number of sub-questions devised with reference to the study's conceptual framework are presented in Chapter 3, mapped to the aforestated practice problems.

Points of departure for the research design are outlined in Chapter 3 with reference to theoretical, philosophical and epistemological perspectives and considerations relevant to the specific purpose, focus and context of the research as an inquiry into human learning. The "research problem" theories (Perry, 2008, p. 20) that are the focus of the literature review in Chapter 2 were subsequently identified with reference to the over-arching research problem: that is, the problem of understanding, facilitating and accounting for adults' informal learning in the context of their involvement in the GraniteNet Community Informatics and Learning Community project.

1.4. Contextualising the Study: A Story of Learning, Technology, Civil Society and Change

Just over a decade into the new millennium, we find ourselves "surrounded by a wall-to-wall discourse of change" (Ingram, Field, & Gallacher, 2009, p. 1); a time in which "contemporary social formations are beginning to cross a threshold that will ultimately be understood to have been epochal in quality" (Chisolm, 2013, p. 70). These changes include increased cultural and linguistic diversity and mobility as a

result of globalisation and developments in communications technologies; changing and uncertain economic and political conditions; convergences between education and work and between learning and leisure; and "a tendency towards individualisation of values and lifestyles" (Ingram, Field, & Gallacher, 2009, p. 1) alongside "reassertions of the need for community" (Edwards, Ranson, & Strain, 2002, p. 2). All of these changes "seep into the domain of citizenship and every aspect of working life" (Huijser, 2006, p. 22) and therefore impact on the contexts of adult learning (Merriam, Caffarella, & Baumgartner, 2007; Cairns & Malloch, 2011).

As a result of these changes, the contemporary Education scholarship and related commentary emphasise the importance of lifelong and life-wide learning for a learning, information and knowledge society (Field, 2006; Jarvis, 2004; Williamson, 1998) and also to ensure preparedness for life transitions and uncertainty (Ingram et al., 2009). Also reflected is a movement from a discourse of education to a discourse of learning (Edwards, Biesta & Thorpe, 2009) with a stronger focus on understanding human learning as an existential, contextualised, social and collective phenomenon (Haggis, 2009; Jarvis, 2009; Merriam et al., 2007). This literature also emphasises the importance of equitable access to and effective use of information, and of digital communications technologies, for individual and community learning, civic engagement and participation in a global network society (Castells, 2010; Selwyn, Gorard & Furlong, 2006) and highlights the transformational impact of digital technologies and the internet on the ways people learn (Andrews & Haythornthwaite, 2007; Brown, 2012; Dede, 2008).

For those individuals and communities located in rural and regional areas, the challenges of this contemporary discourse of change, transition, risk and convergence are said to be particularly significant and complex (Castells, 2000, 2010; Falk, 2001; Loader & Keeble, 2004; Rusten & Skerratt, 2008; Winterton & Warburton, 2011). Moreover, the phenomenon of a digital divide between urban centres and rural communities and its possible relationship to a learning divide—a term used to refer to inequalities in education related to the existence of a digital divide (Sargant, 2000; White, 2011)—is highlighted. These so-called digital and learning divides are presented as pressing issues for rural and regional communities faced with an uphill battle to ensure their longer term economic viability and sustainability in a global knowledge economy, and in an information and network society in the digital era

(Castells, 2010; Horton, 2005; OECD, 2006). Importantly for this study, the rise of communitarian, capacity-building[12] initiatives such as learning communities, cities, towns and regions (Florida, 1995; Longworth, 2006) and of Community Informatics (Gurstein, 2000; Schuler & Day, 2004) are illustrative of collective responses to these phenomena.

Against this backdrop, the case of GraniteNet is both a unique case of rural Community Informatics endemic to its local community and one among thousands of other cases in rural communities around the world, including in comparable Western democracies such as the United Kingdom (Loader & Keeble, 2004), Europe (Haythornthwaite & Kendall, 2010), the United States (Carroll, 2009; Loader & Keeble, 2004; Pigg, 2010), Canada (Clement, Gurstein, Longford, Moll, & Shade, 2012; Longford, 2005), Australia (Hearn, Simpson, Lennie & Kimber, 2004; Marshall, Taylor & Yu, 2004; Pease Rowe & Wright, 2006; Simpson, Wood, Daws & Seinen, 2002) and New Zealand (Craig & Williams, 2011; Williamson, A. 2006)[13]. Like Australia, many nations have recognised the need to maximise the benefits of the social aspects of emerging digital information technologies for the public good and are therefore "working on strategies that will prepare them for an information society that includes a concept of civil society[14] as a target for skills development, engagement, decision making and societal cohesion" (Taylor, Schauder & Johanson, 2005, p. 4).

What characterises GraniteNet and distinguishes it from other Community Informatics projects, however, is its generation as a Learning Community initiative based on lifelong learning principles and a "learning-based approach to community development" (Faris, 2005, p. 31). Thus, the GraniteNet projectprovides a rich case

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[12]   The term capacity-building refers to establishing conditions under which "the necessary personal and systemic attributes" required to identify and address community development challenges can develop and "be mobilised into action for the good of the community" (Adams, 2005, pp. 4, 5).

[13]   Whilst the researcher acknowledges the proliferation of Community Informatics projects in both developed and developing countries in the global North and South, for the purposes of this study, the focus is restricted to CI projects in the context of rural communities in comparable Western democracies to Australia.

[14]   Civil society is a term used in this study to refer to that part of society that is not government and not private enterprise (or business), otherwise known as the third sector. As such, it "is generally regarded as separate from democratic political institutions, their associated delivery agencies and businesses" and "acts for public good in the space between the state and the market place" (Taylor, Schauder & Johanson, 2005, pp. 13,18). This normative definition is applied for the purposes of this study.

study of adult learning in a rural Australian community in a global context of social and technological change and community-based collective action in the early years of the new millennium (Arden & McLachlan, 2014; McLachlan & Arden, 2009). Figure 1-1 is a conceptual representation of GraniteNet as the case study site for this research into adult community learning in a digital age located at the nexus of the three broad areas of concern—learning, technology and civil society—with lifelong learning, change, convergence and transition identified as central themes.
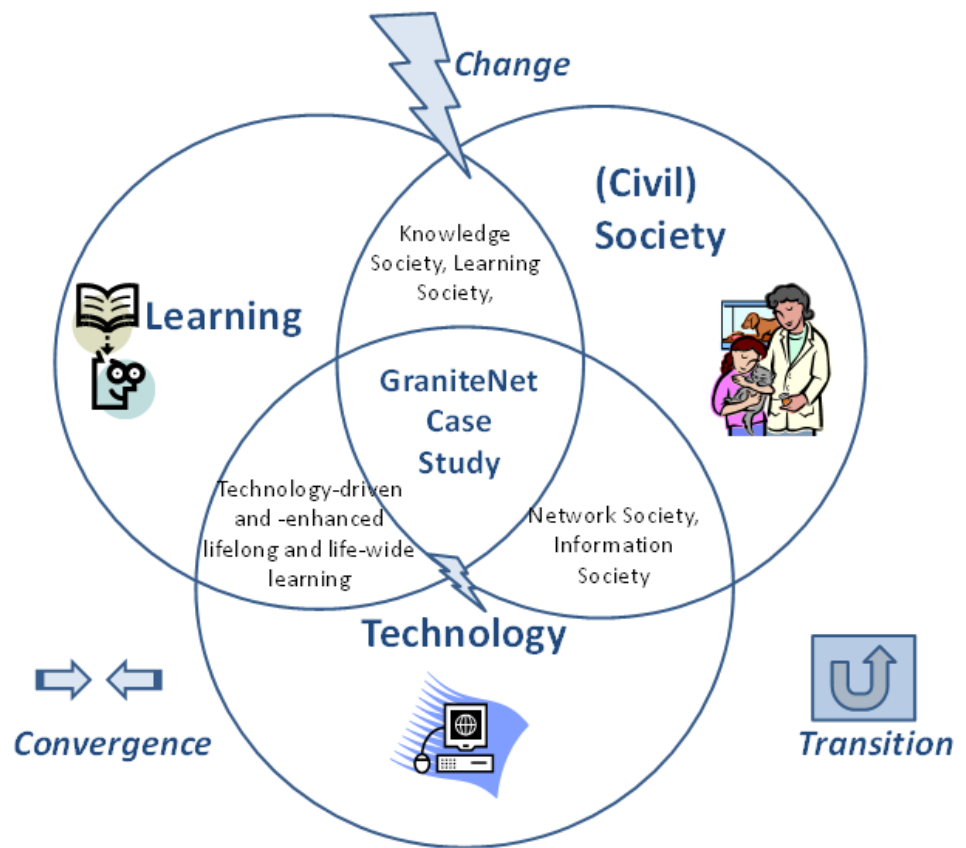
Figure 1-1   The GraniteNet study located at the nexus of learning, technology and civil society in the context of change, convergence and transition.

1.5.   Locating the Study in the Changing Landscape of Adult Education and Lifelong Learning Research

Another important consideration for this study is that the dynamics described above also impact the contexts in which research and scholarship in Adult Education and Lifelong Learning, as fields of social science research, are themselves practised (Edwards, Ranson & Strain, 2002). Amongst the many implications of this changing social science research landscape for the study of adult learning, three are prominent. Firstly, in concert with the aforementioned movement away from a discourse of education to a discourse of learning in the wider Adult Education and Lifelong Learning literature comes a renewed interest in informal and non-formal adult learning from both within and outside the academy (Edwards, Gallacher & Whittaker, 2006). Along with this also comes a growing recognition of Lifelong Learning, Adult Learning, Workplace Learning and Community Learning as legitimate fields of practice and study in their own right (Colley et al., 2003; Hager & Halliday, 2006; Jarvis, 2009). Secondly, the contemporary focus on learning as a process or practice in which individuals engage in a variety of contexts—both formal and informal (or life-wide)—and which they do, ideally, throughout their lives (lifelong) (Sankey & Osborne, 2006) has "expanded the strata in which learning is now a concern for practitioners and the range of people who might be considered to have an educational role" (Edwards, 2009, p. 3).

Thirdly, calls have been made for a paradigm shift in how learning is conceptualised and theorised (Hager & Halliday, 2006; Williamson, 2006), with reference being made to the emergence of a "new science of learning" borne of a discourse and debate about an "alleged newness of learning centred in and around digital technologies", emphasising, on the one hand, the new learning possibilities "afforded by the landscape of new technologies" and on the other, a transformation of learning itself as a result of these new learning affordances (Erstad & Sefton-Green, 2013, pp. 8-9). Add to this the impacts of the ageing of the population and developments in Cognitive Neuroscience, and research into adults' informal learning is ripe for further inquiry and theorising that seeks to understand and explain the nature of this learning and how it occurs in contemporary and emerging learning contexts and environments (Merriam et al., 2007). Such inquiry and theorising is the remit of

research in the fields of Adult education and Lifelong Learning, to which this study claims to make a contribution.

As a form of social science, Adult Education research is described as "heterogeneous, borrowing theories and methods from a range of disciplines" (Fejes & Nylander, 2014, p. 1) and as exhibiting an increasing diversity of conceptual framings used to theorise the nature of adults' learning (Edwards, 2009). Importantly, the field of Adult Education research is also considered by scholars to be a highly contested terrain, troubled by marginalisation, politicisation and also competing demands, on the one hand, for coherence and, on the other, for contextual relevance and sensitivity (Danaher, Tyler & Arden, 2008). Adding to this troubled and "troubling terrain" (Danaher et al., 2008, p. 107), the waters of Adult Education are said to have been muddied by a lifelong learning discourse (Billett, 2010; Brookfield, 2000; Editor, 2006; Grace, 2009; Jarvis, 2009) that is said to privilege formal education over informal learning (Hager & Halliday, 2006) and economic interests over the interests of liberal education and the needs of individual learners and citizens (Fenwick, 2011; Grace, 2009; Tedder & Biesta, 2009). Promoting a broader view of lifelong learning, Sankey and Osborne (2006) define lifelong learning as "learning across the lifespan, learning related to employment-related skills and other aspects of living and learning within various sites and spheres of living, the life-wide dimension" (p. 329). These authors suggest inclusion of a "life-deep" dimension that goes beyond considerations of when and where in life learning occurs to consider more complex, biographical learning related to "beliefs, values, ideologies and orientations to life" (Banks et al., as cited in McLachlan & Osborne, 2009, p. 2). Such a broad and complex view of lifelong learning is one that is informed by the conditions of late modernity and encompasses, and necessarily transforms, the field of Adult Education—a tradition that was established under a much different set of social conditions (Williamson, 1998).

In embarking on her study, this researcher has been mindful of the need to avoid the trap of locating the study firmly in one or other camp of Adult Education or Lifelong Learning. Instead she has preferred to use Williamson's (2006) sociological-philosophical position on "social theory and lifelong learning" (p. 21) as her point of departure, where the researcher's task is seen as a wider remit of serious inquiry into "how human beings [in this case, adults] actually come to learn what they claim to know and believe, and more importantly, how their knowledge changes as the

circumstances of their lives alter" in a Western society that is "dominated by a culture of modernity" (Jarvis, 2009, p. 7). In such a research enterprise, this researcher concurs with Jarvis (2009) that "the approach of any one discipline…is insufficient for our understanding of learning" (p. 3). She also concurs that there is a "necessary…and equal place" (Usher & Bryant, 1989, p. 3) for formal knowledge from foundation disciplines, but that it needs to be located in and informed by the practice of the disciplines and their associated fields of scholarship. Thus, contributions from the foundation disciplines to theorising about adults' everyday learning, including identified "parent theories"[15] (Perry, 2008) considered important for the study, are a focus of the literature review in Chapter 2, viewed from a predominantly liberal humanist tradition of Western educational thought (Hager & Halliday, 2006) provisionally linked to critical and postmodernist perspectives (Usher & Bryant, 1989).

1.6.   Anticipated Contributions to Knowledge

The study seeks to contribute to knowledge about adults' informal community learning in technology-enriched environments and settings on a number of levels. For example, Edwards et al (2002) claim that "There has been little theoretical discussion specifically of the nature of the learning required to engage with the change processes to which [lifelong learning] is meant to be a response" (p. 525). They point to the need for an "analysis of the learning that takes place outside of as well as inside institutionalised accredited participation in formal education and training" along with "an urgent need to know more concerning possible ways of intervening to establish a 'culture' of lifelong learning" (Edwards et al, 2002, pp. 532, 534). The research therefore seeks to make a contribution to knowledge about how learning is experienced outside of formal education and training institutions and organizations, focussing on the "far more diverse forms of learning in which people engage" (Edwards et al., 2002 p. 529), in particular learning embedded in people's social participation in community volunteering and associational life in the digital era.

The study's findings therefore contribute to knowledge about the nature and role of learning in rural Community Informatics and, concomitantly, of the relationship

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[15]   Perry (2008) defines parent theories as important foundation theories "relevant to resolving the research problem" (p. 21).

between digital ICTs and informal community learning in rural community volunteer work and associational life. Specifically, knowledge claims are focussed on enhancing understanding about what kinds of knowledges, skills, literacies and capabilities are developed in Community Informatics learning, what makes significant and valuable learning possible in Community Informatics, and what constitutes effective use (Gurstein, 2003) of digital technologies for individual and community development and empowerment in the context of the so-called digital and learning divides (Sargant, 2000; White, 2011). These contributions to knowledge in the emerging field of Community Informatics (CI) help to address the reported need for empirically-generated knowledge about how digital technologies and the Internet can be used in the service of community (Bishop & Bruce, 2005), particularly in relation to the "rapidly emerging CI application area of education, training and lifelong learning" (Gurstein, 2000, p. 15). In so doing, the findings demonstrate how the significant educative effect of people's participation in community associational life and volunteer work identified in the literature (Carroll, 2009; Duguid, Mundel & Schugurensky, 2013; Livingstone, 2010) is magnified for the digital age by a learning-based approach to Community Informatics.

With respect to the challenges of researching informal adult learning, McGivney (2006) concludes that "the main challenge for research is to capture a process that is not always conscious or recognised and identify the ways in which people acquire and utilise the knowledge and skills they gain informally and often unintentionally" (p. 33). The study's contribution to methodological knowledge is related to the application of phenomenographic research to an investigation into the nature and role of adults' informal learning in the context of this Australian rural Community Informatics project. Contributions to the theory underpinning phenomenography are also made based on knowledge gained as a result of the study's experimentation with phenomenography and variation theory in this setting.

The study aspires to enable Adult Community Educators, Adult Education researchers and Community Development practitioners working in communities in comparable settings to make more informed decisions about how to make effective use of digital technologies for individual, organisational and community learning and development. Finally, and most importantly, it is the researcher's hope that the information and insights generated from this study will be able to be used by

Community Informatics practitioners and interested stakeholders in rural and regional communities to inform their practice.

1.7. Organisation of the Thesis

The thesis has been organised into eight chapters, as shown in Table 1-1.

Table   1-1
Organisation of the Thesis

Chapters	Contents
Chapter 1: Introduction	• Introduction to the study • Researcher's orientation • Contextualisation of the study • Research objective and methodology • Anticipated contributions to knowledge • Overview of the thesis
Chapter 2: Literature Review	• Focus and scope of literature review, and rationale for selection of literature; literature sources • Report of review of literature informing the study, including central themes, emerging issues and knowledge gaps identified • Implications and recommendations for the design and conduct of the GraniteNet study
Chapter 3: Research design, conceptual framework and methodology	• Presentation and justification of the research questions, research design, conceptual framework and methodology • Conceptual and analytical frameworks to guide data collection, analysis and interpretation • Sampling considerations and techniques and procedures for data collection and analysis • Strategies to ensure research quality and manage challenges • Role of the researcher and ethical considerations
Chapter 4: Report of research methods	• Report of research methods and procedures undertaken • Ethical considerations and how they were addressed in the study • Challenges and limitations
Chapter 5: GraniteNet case study report	• Organisational, geographical and historical contexts • Research context, activities and participants
Chapter 6: Conceptions and experiences of learning in GraniteNet: The phenomenographic outcome space	• Presentation of the results of phenomenographic analysis of participants conceptions and experiences of learning in GraniteNet: Categories of description in the phenomenographic outcome space • Justification and validation of phenomenographic findings
Chapter 7: Interpretation and discussion of findings: Understanding, facilitating and accounting for learning in GraniteNet	• Interpretation and discussion of findings in answer to research questions and in the context of the case study report with reference to key themes and knowledge gaps in reviewed literature
Chapter 8: Implications and contributions to knowledge: An intellectual and philosophical engagement	• Implications of the findings for understanding the nature of adults' informal learning in GraniteNet • Transferability of findings to other settings • Contributions to knowledge (theory, methodology, scholarship and practice of Adult Education, Lifelong Learning, Community Informatics) • Recommendations for policy, practice and further research

1.8.   Conclusion

This chapter presented the rationale for the study and outlined the focus and scope of the research as an inquiry into human learning in the context of a local, rural Learning Community and Community Informatics initiative called GraniteNet, located in South East Queensland, Australia. The study has been contextualised historically, geographically and in terms of its knowledge interest, as an inquiry into the nature of GraniteNet volunteers' informal learning in the context of their participation in the activities of the community technology hub and use of the GraniteNet community web portal. As such, the study is identified as belonging to the fields of Adult Education and Lifelong Learning and is informed by contemporary and emerging cross-disciplinary fields of scholarship and practice at sites of convergence between traditional, foundation disciplines in the context of a changing social science research landscape.

Having identified phenomenography as the over-arching approach adopted for conceptualisation of the research questions, linked to the identified practice problems, , the research design and methods are briefly outlined and an overview of the organisation of the thesis is presented. The chapter concludes by anticipating contributions to the theory, philosophy and practice of informal adult learning in the context of rural civil society and associational life in the digital era and to the range of methodologies and techniques that can fruitfully be used to investigate informal adult learning in community and voluntary workplace settings.

Chapter 2.
<u>Literature Review</u>

To investigate something in the world we need to have a theory about what that something is and how we are to go about investigating it (Usher & Bryant, 1989).

2.1.   Introduction

Chapter 1 set the scene for a review of the scholarly literature on adults' informal, community learning in a digital era, locating the study in the context of scholarship at the nexus of three broad areas of concern—learning, technology and (civil) society—against a backdrop of rapid and discontinuous social and technological change. In this chapter, the GraniteNet study is firstly mapped to its disciplinary and cross-disciplinary fields of scholarship under the umbrella of Adult Education and Lifelong Learning as overlapping fields of specialist Education studies in the changing landscape of Adult Education research. An outline of the rationale for and approach adopted to scoping and focusing the review of literature is then provided to identify the most relevant and important literature needing to inform the study drawn from the nominated fields of scholarship. Drawing on Perry (2008) and Usher and Bryant (1989), a situated field of study[16] approach serves as an organising framework for the review of the relevant literature from a broad inter- and cross-disciplinary scholarship dealing with the theory, philosophy and practice of adults' everyday learning in the context of civil society in the digital age. The descriptor "everyday learning" is used throughout the chapter to refer to adults' informal learning in the context of everyday life situations and activities, and specifically in the daily activities of local community and associational life, and is a usage commonly found in the literature reviewed for this study[17].

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[16]   For the purposes of this review, a field of study constitutes a defined, coherent field of scholarship in one or more recognised fields of knowledge related to a particular field of practice (Usher & Bryant, 1989).

[17]   See for example Billett (2010); Bruce et al. (2012); Erstad and Sefton-Green (2013); Heron (2009); Jarvis (2009); Livingstone (2001); Marton and Booth, (1997); McGivney (2006).

As the first stage in this situated field of study approach, an initial overview of "parent" (Perry, 2008, p. 21) learning theories[18] from the contributing disciplines[19] is presented, with a focus on highlighting contributions to theorising about adults' everyday learning and knowing from the identified foundation disciplines[20] of Psychology, Sociology, and Philosophy. Important contributions from the secondary disciplines of the Library and Information Sciences, Cultural Anthropology and Cognitive Neuroscience are also highlighted. This is followed by a review of the research problem theories[21] of adult learning and informal learning in the context of rural community life in the digital era that draw on theorising from these disciplines.

Serving as an organising framework for the review of these research problem theories, a tri-part categorisation of orientations to theorising about adult and lifelong learning identified in the literature is then presented and justified, with learning theories considered most important for the GraniteNet study highlighted. Theories and models of informal learning particularly relevant to the study drawn from this literature are then analysed. Following this, findings from the review of scholarly literature focusing on the impact of emerging digital technologies on adults' informal learning, including both conceptual and empirical studies, are critically analysed and synthesised to identify significant implications for the GraniteNet study.

As the final stage in the situated field of study approach, the literature from three complementary fields of scholarship and practice specifically relevant to investigating learning the GraniteNet study—learning in geographical Learning Communities, learning in associational life and volunteer work, and learning in Community Informatics—is subject to critical analysis to identify the ways in which adults' informal, everyday learning in the context of their participation in civil society and associational life is defined and theorised. Emphasis is placed on highlighting how

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[18]   Drawing on the work of Perry (2008), "parent" (p. 21) learning theories are defined as important foundation learning theories influencing theorising about adults' informal learning in the literature reviewed for this study.

[19]   Viewed through the lens of foundationalism (Denzin & Lincoln, 2005), a discipline constitutes a "base or source" of "evidentiary" (p. 27) knowledge that has a "demonstrable relationship" (Usher & Bryant, 1989, p. 41) with a (normally, professional occupational) field of practice.

[20]   Foundation disciplines are established, enduring "secure and reliable" (Usher & Bryant, 1989, p. 41) sources of (usually, theoretical) knowledge for one or more fields of practice

[21]   Research problem theories (Perry, 2008) are theories directly related to the research problem of understanding, facilitating and accounting for adults' informal learning in GraniteNet.

such theorising has been affected by social and technological change and, in particular, by the convergences of living, learning working and the ubiquity of digital technologies and the Internet.

The chapter concludes with a synthesis of key themes and emerging issues considered important for the study of learning in GraniteNet. Knowledge gaps and particular challenges for researchers seeking to investigate informal adult learning are highlighted, and their implications for the study discussed with reference to important conceptual and methodological considerations, on the basis of which recommendations for the design and conduct of the GraniteNet study are made.

2.2.   A Situated Field of Study Approach

The body—or in this case, bodies—of literature reviewed for this study are necessarily extensive; therefore, a strategy needed to be devised to identify the literature of particular significance to an investigation of the research problem, whilst excluding that considered to be more peripheral. Drawing on the advice of Perry (2008) and informed by Usher and Bryant's (1989) perspectives on the place of theory in Adult Education research, a situated field of study approach was devised to focus and scope the literature review. Firstly, in addition to concentrating on the literature directly related to the stated research problem of understanding, facilitating and accounting for learning in GraniteNet, the literature review needed to "demonstrate a familiarity with some *parent theories*", [emphasis in original] which are defined as important foundation theories "relevant to resolving the research problem" (Perry, 2008, pp. 20-21). However, Usher and Bryant (1989) argue that in the context of Adult Education research, the situational relevance of foundation theories "is not self-evident" and that, to be of real benefit, theories must have "instantial relevance" to the "particular circumstances of practice" for practitioner-researchers to see how theory "enables greater understanding of their situation" (Usher & Bryant, 1989, pp. 62-63). Situating the review of literature and theories in the practice setting enables the Adult Education researcher to draw on bodies of theory "in a complementary way" (Andrews & Haythornthwaite, 2007, p. 65) to make meaning of informal learning in her context.

Therefore, parent learning theories from the foundation disciplines were considered for inclusion in light of their "instantial relevance" (Usher & Bryant, 1989, p. 63) to the specific conditions of practice at the local level. For the purposes of this

review, instantial relevance is determined via a filtering process that considers theories and perspectives from the literature against a set of criteria devised by the researcher related to the relevant areas of concern for the study—that is, learning, technology, (civil) society and change—and to the particular characteristics, context and circumstances of GraniteNet, as the case study site, and its participants. The result is a gradual scoping and focusing of the literature to be included, and excluded, from the review. This staged, situated field of study approach used to guide the review of literature informing the GraniteNet study is summarised in the flow chart at Appendix A and illustrated in the diagram in Figure 2-1. As shown in the diagram, literature has initially been subject to a 'broad-brush' review that, with reference to the particular characteristics and circumstances of the GraniteNet case study, is gradually scoped down to afford a more detailed review of the literature that needs to inform the study.
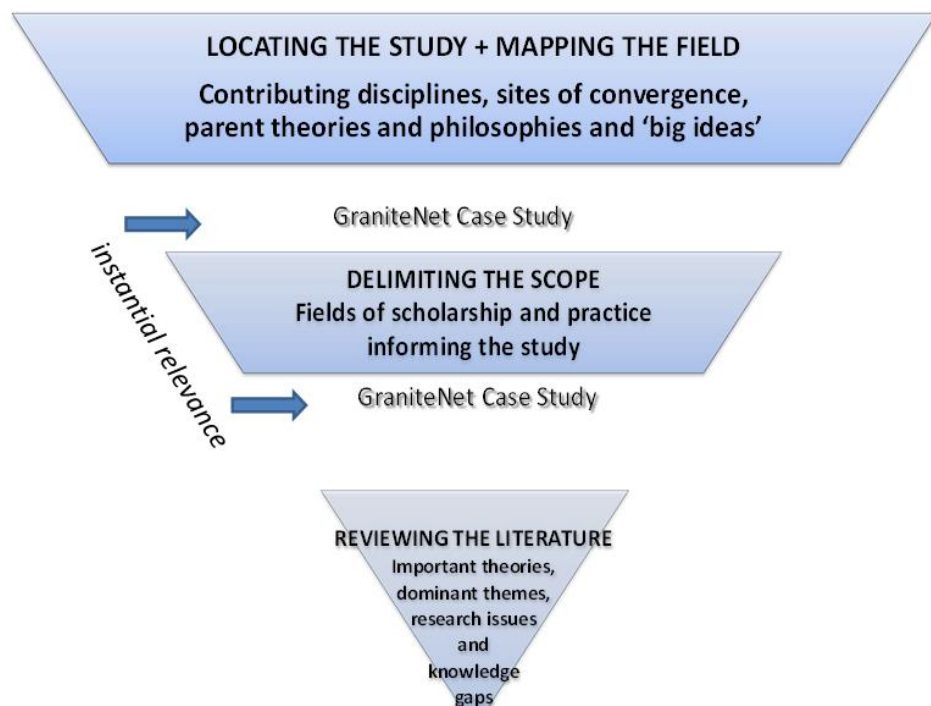
Figure 2-1   A situated field of study approach to the literature review.

Shown as the preliminary stage in Figure 2-1, the GraniteNet study was initially mapped to its contributing disciplines and related fields of scholarship to identify which were likely to be the more important for the study from the veritable "jungle" of learning theories from which to choose when theorising adult learning (Knowles, 1973, p. viii). The results of this scan are presented at Appendix B. Literature from the

fields of scholarship listed in the table at Appendix B, sourced from peer reviewed journals, edited works and monographs, and authoritative websites and databases, was included, with particular attention paid to literature focused on the convergences, interfaces and intersections between and among fields.

The theoretical perspectives in this literature identified as needing to inform the study were initially evaluated on the basis of their "instantial relevance" (Usher & Bryant, 1989, p. 63) to the case study site (that is, GraniteNet as the specific practice setting) with reference to the geographic, geopolitical, social and demographic characteristics of GraniteNet (viewed as a site of learning) and its participants (viewed as adult learners), thus defining the boundaries of the "research problem area" (Perry, 2008, p. 22). Sources for the literature review are listed at Appendix C, mapped to their respective fields of study and the instantial relevance criteria for inclusion in the literature review. This literature was then reviewed to identify parent learning theories (that is, theories drawn from the contributing primary and secondary foundation disciplines) and theories and models of informal learning and adult learning considered most relevant to and important for the study. These theories, along with key findings from relevant empirical studies, were analysed to identify common themes, emerging issues and knowledge gaps. The findings gradually coalesced into the following broad groups:

- theories of adults' everyday learning;
- theories and models of informal learning, specifically;
- theorising about adults' literacy for lifelong and life-wide learning in the digital era;
- reports of conceptual and empirical research into the impact of digital technologies on adults' informal learning;
- theorising dominating the three practice fields with instantial relevance to the GraniteNet study: learning in associational life and volunteer

work[22]; learning in geographic learning communities; and learning in Community Informatics;

- considerations in researching informal adult learning.

A review of identified knowledge gaps and a discussion of implications for the conduct of the GraniteNet study constituted the final stage of the situated field of study approach to the literature review, as illustrated in Figure 2-1. The results are reported in the following sections of the chapter.

2.3.   An Overview of Contributions from the Foundation Disciplines to Theorising Adults' Everyday Learning and Knowing

The report of the outcomes of the literature review begins with a brief overview of contributions from the foundation disciplines to theorising adults' everyday learning and knowing, highlighting the parent learning theories.

2.3.1. Parent theories informing the study

To understand adult learners and the nature of adult learning in a particular social context, scholars in the fields of Adult Education and Lifelong Learning typically draw on the disciplines of Psychology, Sociology and Philosophy (Hodkinson & McLeod, 2007; Illeris, 2007; Jarvis, 2009; Somekh & Lewin, 2005). These include scholars from the field of Library and Information Sciences who are particularly interested in the relationship between information literacy, lifelong learning and adult learning (Bawden, 2001). Some of the more important contributions from theorists in each of these foundation disciplines, highlighting prominent theorists, key theoretical constructs and propositions about adults' everyday learning and knowing, are summarised in the table at Appendix D[23].

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[22]   Learning in associational life is the literal English translation of *la vie associative*, a term from the French tradition of adult or 'popular' education that refers to "the educative power" of participation in group and community life (Smith, 2007). This tradition is paralleled in the US in the work of Eduard Lindeman and Mary Parker Follett (Smith, 2002) and is linked to the concepts of active citizenship and participatory democracy.

[23]   Whilst the categorisation in the table implies clear distinctions and boundaries between and among the different schools of thought, there is significant overlap evident in the theorising from the different disciplines, with theorists often drawing on more than one tradition or perspective to inform their thinking.

Theories drawn from developmental, cognitive, cultural and social branches of Psychology have long influenced scholars in Adult Education, reflecting an individualistic orientation and highlighting the unique nature of adults as learners (Merriam et al., 2007). In particular, Merriam et al.'s (2007) well-recognised categorisation of "five orientations" to theorising learning in adulthood— "behaviourist, humanist, cognitivist, social cognitivist and constructivist" (pp. 295-6)—draws primarily on theorising from Developmental, Humanistic, Cognitive and Cultural Psychology, emphasising individual experience, cognition and interaction with the environment. Here, learning is theorised as meaning-making, self-actualisation and responsiveness to change. Examples include theorising about the specific characteristics of adult learners and adult learning (Heron, 1992, 2009; Kegan, 1994; Knowles, 1973, 1984; Mezirow, 1991; Rogers, 1969; Tennant, 1998) and about learner agency, motivation and self-efficacy (Bandura, 1986, 2001; Bruner, 1986). Contributions influenced by humanistic and, more recently, Vygotskian sociocultural-psychological and constructivist perspectives (Vygotsky, 1978) are also seen as significant to theorising about adult learning (Brookfield, 2000; Candy, 1991; Fenwick & Tennant, 2004; Merriam et al., 2007; Zukas & Malcolm, 2002). Perspectives from these traditions are drawn on in subsequent sections of the chapter to characterise adults as learners and their distinctive orientations to, and experiences of, informal, everyday learning.

In contrast, sociological perspectives of adult and lifelong learning tend to emphasise structural factors "that condition or limit individual [learning] choices and their consequences" (Herr & Cramer, 1996, p. 201). This theorising focuses on the relationship between the individual and their social and historical contexts—or their "life-worlds" (Jarvis, 2009, p. 11), the distribution of learning opportunities and resources and the exercise of power (Williamson, 2006). For sociologists, therefore, adult learning is seen primarily as relational, transactional and, ideally, as emancipatory. As noted by Colley, Hodkinson, and Malcolm (2003) in their review of the literature on informal and non-formal learning, the Habermasian concept of the life-world (Habermas, 1987) and theories of everyday forms of knowledge and knowledge discourses from Habermas (1987), Bernstein (1985) and Giddens (1991) also appear frequently in the literature on adults' informal learning informed by

sociological perspectives and have therefore been identified as parent learning theories.

Also drawing on sociological perspectives are theories of hermeneutic understanding (Usher & Bryant, 1989), narrative knowing (Jarvis, 2009; Tedder & Biesta, 2009), reflexivity (Edwards et al, 2002) and biographicity[24] (Alheit, 2009), deemed to characterise adults' learning in everyday life. Theorising about the nature of social life that draws on social capital theoretical perspectives (Bourdieu, 1986; Putnam, 2000; Field, 2005), social network theory (Granovetter, 1973) and the related concepts of learning networks and networked learning (Cross & Parker, 2004; De Laat, 2006) is also considered influential and important for the study. These contributions are summarised in the table at Appendix D and are featured in the discussion of perspectives of adult learners and adult learning from the broader Lifelong Learning literature in subsequent sections of this chapter.

Whilst still emphasising adults' life experiences, problems and concerns as the point of departure for learning, philosophical perspectives on adults' learning tend to emphasise a normative framework that considers learning in relation to a broader societal orientation and educative purpose—or in the case of postmodernism—in relation to "what education can achieve and what kind of image of society should be the reference point for such endeavours" (Biesta, 2012, p. 690). Theorising by scholars in the fields of Adult Education and Lifelong Learning draws variously on Deweyan pragmatism (Dewey, 1938) (see for example Biesta, 2009; Carroll, 2009; Hager, 2001; Hall, 2004), on political perspectives from Freirean critical pedagogy (Freire, 1970, 1998) and on Marxist or feminist social activism found in American popular education scholarship (Livingstone, 2010; Rogers & Haggerty, 2013; Schugurensky, 2000).

The literature on public pedagogies (Biesta, 2012; Charman & Ryan, 2015) and learning in social movements (Foley, 1999; Hall, 2002, 2006; Kilgore, 1999) also contributes to our understanding of adults' learning from a philosophical perspective influenced by a postmodernist critique that at the same time serves to deconstruct the categories adult educators and Adult Education researchers have long used to label

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[24]   In the context of biographical learning ("learning within and through one's life history"), "Biographicity means that we can redesign again and again, from scratch, the contours of our life within the specific contexts in which we (have to) spend it, and that we experience these contexts as shapeable and designable" (Alheit, 2009, p. 125).

their practice (Merriam et al., 2007). The thinking of Dewey is nonetheless highly influential for the GraniteNet study, with theorising informed by Deweyan pragmatism reflected in much of the literature reviewed for this study. These include philosophical perspectives on adult education as a human right, a democratic project and a means to liberation from disadvantage and oppression, and also as a relational and embodied phenomenon involving a transaction between self and the world that is rooted in individual experience, practical activity and communication as "participation in common activity" (Biesta, 2009, p. 62).

2.3.2. Contributions from the secondary foundation disciplines

More recently, the widely reported trend towards a focus on the contexts and processes of learning "outside the academy" (Edwards, Gallacher & Whittaker, 2006, p. 1) and learning "beyond the school gates" (Drotner, 2013, p. 43) to understanding learning as a situated, cultural practice in families, communities, organisations and workplaces alike (Billet, 2010; Haggis, 2009) has also seen theorising about everyday adult learning influenced by scholars from the fields of Cultural Anthropology (Lave, 1996, 2009; Lave & Wenger, 1991; Rogoff , 2003, 2008, 2012) and Cultural Studies (Biesta, 2012; Charman & Ryan, 2015). Here, knowledge is seen to be situated in cultural practices (in the case of GraniteNet, the practices of participation in organisational and associational life) with an emphasis on both individual and collective learning as participation in and acting on these cultural practices (Billett, 2006; Hodkinson, Biesta, & James, 2004; Lave, 1996; Rogoff, 2003). Important contributions from the discipline of Cultural Anthropology to theorising about adults' everyday learning include insights about the nature and processes of individual and collective learning, drawing attention to "the configuration of routine ways of doing things in any community's approach to living" (Rogoff, 2003, p. 3)—and, by default, learning.

The rise of lifelong learning as "an idea for our times" (Bagnall, 2009, p. 1) and the dawn of the information society and the digital era (Candy, 2004; European Commission, 2008) have seen the discipline of Library and Information Sciences become increasingly important for understanding the education and learning of adults. This influence is primarily reflected in the Higher Education sector under the banner of Lifelong Learning scholarship and with a focus on information literacy—hence

expanding the remit of the Information Sciences into the scholarship of Adult Education. The links between the concepts of information literacy and (lifelong) learning and between information literacy, digital literacy and active citizenship (Bawden, 2001; Bron, 2006; Bruce et al., 2012; Catts & Lau, 2008; Ramalho Correia, 2002) have seen information literacy and digital literacy—as "central topics for the information sciences" (Bawden, 2001, p. 24)—become important considerations for the field of Adult Education and its subsidiary fields of scholarship and practice.

More recently, incursions from scholars in Library and Information Sciences into the Adult Community Education sector[25] highlight the increasing importance of this discipline for understanding the nature of adults' informal learning with an emphasis on information literacy for lifelong and life-wide learning in the digital era. Theorising from the Library and Information Sciences is therefore considered to have significant import for this study of adults' informal learning in the context of their participation in community and associational life in the "new information age" of the 21st century (Castells, et al., 1999). This research has significant implications for understanding adults' informal learning in the context of their participation in GraniteNet's hybrid community working and learning environments.

Finally, insights from the new and expanding field of Cognitive Neuroscience— as a hybrid of scholarship in the fields of Neurobiology and Cognitive Science (Merriam et al., 2007)—are also becoming increasingly recognised in the literature on adult learning, particularly with reference to understanding the role of emotions in learning, the nature of learning in later life, and learning in digital learning environments and networks, which are all significant areas for the GraniteNet study. Although propositions about adult learning based on recent developments in Cognitive Neuroscience are still viewed with caution, and even scepticism, by Adult Education scholars (Illeris, 2007; Merriam et al., 2007), there are nonetheless some "crucially significant" (Illeris, 2007, p. 15) discoveries about the functioning of the brain with implications for understanding adults' learning. These include, firstly, findings about brain plasticity, with implications for learning in later life and for people with brain injury, cognitive impairments and disabilities (Doige, 2010; Immordino-Yang &

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[25]   See for example, Bruce, Sommerville, Stoodley and Partridge's (2013) studies of Community Information Literacy.

Damasio, 2007; The Royal Society, 2011). Secondly, knowledge about the links between people's emotions and their reasoning (Illeris, 2007), including decision-making and choice, or volition, has significant implications for understanding adults' learning in everyday life settings. Thirdly, the propensity of the adult human brain to identify patterns, associate and make connections among disparate pieces of information is seen as significant for understanding adults' learning in information-rich (Buzan & Buzan, 2003) and technology-enhanced environments and networks (Siemens & Tittenberger, 2009).

Having identified important contributions from these disciplines as a point of departure, the focus now moves to a review and synthesis of theorising in the literature from the aforementioned fields of scholarship about adults' informal, everyday learning in the digital era.

2.4.   Three Broad Orientations to Theorising Adults' Everyday Learning in the Digital Era

Based on a systematic review of the literature from the nominated fields of scholarship, a tri-part classification of theories is presented that organises key features and characteristics of theorising about adults' everyday learning in the digital era into three broad theoretical orientations: Cognitive-psychological; Sociocultural-contextual; and Existential-developmental. The classification is presented in Table 2-1, with key features and characteristics of each orientation highlighted in terms of:

- the dominant themes and big ideas about adults' everyday learning reflected in the literature belonging to each orientation;

- the different philosophical lenses through which theorising in each orientation can be viewed, which necessarily results in particular perspectives being emphasised over others depending on which lens is adopted by the theorist;

- the orientation's primary epistemological perspective with reference to its preferred conceptions of learning, knowledge and literacy;

- the conceptions of digital technologies reflected in theorising from that orientation; and

- a summary of the main contributions from each orientation to theorising

adults' informal learning in the digital era.

It is important to note that whilst such a classification or grouping is a useful analytical tool, it is not intended to represent ontological distinctions in terms of how adults' informal learning actually occurs in different life domains, situations and settings. Nor does it represent distinct, clearly demarcated schools of thought. As indicated by the horizontal, bi-directional arrows at the top of Table 2-1, the boundaries and demarcations between the three orientations are not rigid but permeable, reflecting the tendency for theorising in each orientation to be influenced by or draw on perspectives from one or both of the others in a number of respects. Moreover, learning in each orientation can also be viewed through one or more philosophical lenses (such as liberal humanist, critical humanist, and pragmatist, postmodernist or critical feminist, for example) which changes the particular facets of learning that are in focus in each case. Thus, rather than being a scientifically rigorous classification of learning theories, the classification in Table 2-1 serves more so as an analytical tool and heuristic; a map to guide the researcher on her journey across the "troubling terrain" that is the Adult Education and Lifelong Learning research landscape (Danaher et al, 2008, p. 107).

To illustrate, viewing learning through a critical-feminist or critical-humanist lens is likely to highlight the embodied and emergent nature of learning through individuals' participation in and remaking of cultural practices in workplace settings, (see for example Fenwick, 2006; Billett, 2006), thus reflecting a broadly Sociocultural-contextual orientation but with Cognitive-psychological and Existential-developmental influences. Viewed from a liberal-humanist perspective on the other hand, understandings of learning might reflect any one or a combination of all three orientations (see for example, Dewey, 1938; Hager & Halliday, 2006; Jarvis, 2009; Illeris, 2007), whilst a postmodernist reading of informal learning prefers Sociocultural-contextual and Existential-developmental orientations over a Cognitive-psychological orientation (see for example, Alheit, 2009). Critical and postmodern perspectives are nonetheless also represented in the psychological-cognitivist orientation (see for example Brookfield, 2000; Edwards et al., 2002; Kegan, 2009; Usher & Bryant, 1989).

Table 2-1

Three Broad Orientations to Theorising Adults' Informal Learning in the Digital Era

Orientation and characteristics	Cognitive-Psychological	Sociocultural-Contextual	Existential - Developmental
Lenses	Liberal humanist, critical humanist, pragmatist	Liberal humanist, critical humanist, pragmatist, postmodernist, critical feminist	Liberal humanist, critical humanist, postmodernist, pragmatist
Dominant themes and big ideas	Critical reflection, reflexivity, experience, self-direction, inquiry, agency, identity, awareness, motivation, self-efficacy, meaning, frames of reference, intelligence, transformation, dialectic, personal epistemologies, informed learning, metacognition, volition, intentionality, cognitive territory, conceptual space	Community, collective, collaborative learning, reciprocity, dialogue, activity, emergence, expansion, learning constraints, barriers and affordances, co-construction, co-generation, learning ecologies, social learning capital, interactional infrastructure, *la vie associative*, participatory democracy, civic engagement,	Person, subjectivity, life-world, biographicity, learning lives, learning trajectories, learning careers, life as a learning context, self as content, the everyday, social structures, discourses, social and human capital, life constructions, autonomy
Conceptions of knowledge and knowing	Rational, conceptual, experiential, personal, meaning-making, interpretation, tacit-explicit, propositional, codified-uncodified, Modes 1 and 2, connective, creative, imaginative	Situated, cultural, contextual, practical, know-how, know-who, know-where, tacit, Mode 2, relational, collective, embodied, novice-expert, 'really useful knowledge'	Embodied, narrative, biographical everyday, transversal, concientization, (inter)subjectivity, practical consciousness, intuitive knowing
Conceptions of learning as...	Experience, intelligent action, experimentation, reflection	Participation, practice, transaction, apprenticeship, expansion, emergence	Development, becoming, construction, formation
Conceptions of literacy/literacies	(Digital) information literacy, new (multi) literacies, digital competence, critical thinking, generic skills, informed learning	Literacy practices, Community Information Literacy, social literacy, network literacy, informed learning, technology stewarding, socio-technical literacy practices	Functional literacy, capabilities, learning literacies, multi-modal, new media literacies, information (in)equality, digital divide/inclusion
Conceptions of digital technologies	Tools, knowledge, skills, literacies, competencies, connections, pattern recognition, artistic-creative	Socio-technical environments and systems, networks, Appropriation, connection Technology-mediated, hybrid learning practices and environments, digital habitats, artefacts,	Tools/utilities, affordances, capabilities, dispositions, fragmentation, digital divide, empowerment
Main contributions to understanding adults' informal learning in a digital era	The centrality of the learner's frame of reference and experience in the learning process The importance of reflexive, dialectic thinking Links between learner's identity and self-concept and learning How tacit knowledge shapes adults' informal learning Importance of the learner's awareness, self-direction and	Learning occurs through participation in communities and networks of interest and practice The centrality of localised sociocultural practices for individual and collective learning Links between individual and collective learning Links between learning and working Links between social capital, social inclusion, civic engagement and	Centrality of values of and dispositions towards learning Links between informal learning and formal learning/education Links between life transitions, roles and trajectories and learning Links between the 'macro' and 'micro' perspectives of lifelong and life-wide learning Links between learning in childhood and adulthood, intergenerational

Contributions of theorising in each of the three orientations to understanding and accounting for adults' everyday learning in the digital era are summarised in the following sections, highlighting what is central to theorising learning in each case. This includes insights offered about the links between learning and other related factors and phenomena of particular interest to this study, such as perspectives on the implications of digital technologies and the internet for theorising about learning in each orientation. In each case, learning theories of particular importance for the GraniteNet study are highlighted.

2.4.1. Theorising from the cognitive-psychological orientation

As summarised in Table   2-1, theorising in the cognitive-psychological orientation emphasises:

1. The centrality of the learner's own experience, motivation, volition, self-directedness, awareness, intentionality, practical reasoning and capacity for dialectical thinking and reflexivity.
2. The links between tacit and explicit knowledge, artistic and creative activity, information literacy, imagination, intuition and learning.
3. The affordances of digital technologies and literacies for self-managed, self-directed, personalised and connected learning.

As such, theorising from the perspective of the cognitive-psychological orientation has made a significant contribution to our understanding of what Illeris (2007, p. 26) refers to as the "incentive dimension of learning" in terms of the intentionality (Schugurensky, 2000), attitude, motivation and volition of the individual learner. The inextricable link between the incentive dimension and "the content with which the learning is concerned" is also acknowledged (Illeris, 2007, p. 27). From this perspective, learning has traditionally been viewed as being primarily a rational process of meaning-making and knowledge or skill acquisition, however a stronger focus on the "conative" (Mezirow, 2000, p. 16) dimensions of learning has emerged as part of the movement to more holistic understandings of learning in recent decades (Merriam et al., 2007).

The overlap with some aspects of both the existential-developmental and sociocultural-contextual orientations, particularly in terms of the focus on individual development and autonomy and person-environment interaction respectively, is acknowledged. Theorising about adult learners and adult learning from the cognitive-psychological orientation considered important for investigating learning in GraniteNet are now briefly discussed.

2.4.1.1.   *Theorising about adult learners and adult learning*

In the field of Adult Education, the adult learner has traditionally been viewed from the perspective of humanistic psychology, with the adult learner defined by Mezirow (2000), as "a person old enough to be held responsible for his or her acts" (p.24). Humanistic theories of adults as learners and of adult learning are essentially cognitive theories which place an emphasis on both affective and cognitive dimensions of learning (Merriam et al., 2007), with learning linked to self-actualisation and the development of the whole person. Along with theorising from developmental and humanistic Psychology, cognitive learning theories contributed to the theoretical foundations of andragogy—or "the art and science of helping adults learn" (Knowles (1984, p. 6)—which proposed a distinctively adult orientation to learning. Other prominent characterisations of adults as learners from this tradition include Rogers' (1961, 1967, 1969) hypotheses about the core conditions for adults' personal learning and development, McCluskey's (1970) theory of margin, (as cited in Knowles, 1973), and Heron's (1992) theory of personhood.

Seeking to bridge what he sees as a gap between theorising in the tradition of Adult Education and the more recent Lifelong Learning scholarship, Brookfield (2000) proposes four distinctively adult forms of learning based on empirical research: "the capacity to think dialectically, the capacity to employ practical logic, the capacity to know how we know what we know, and the capacity for critical reflection" which, together, characterise what is "distinctive about the adult dimension to lifelong learning" (p. 91).

For Mezirow (2000), the adult learner can be characterised as having, and being able to exercise, the following capacities and capabilities that constitute the ability "to think like an adult"; that is, being "aware of the context of their problematic

understandings and beliefs, more critically reflective on their assumptions and those of others, more fully and freely engaged in discourse, and more effective in taking action on their reflective judgments" (pp. 3, 31). According to Mezirow (2000), these are the prerequisites for and mechanisms of an adult's potential for transformative learning, whereby she is able to:

> …transform…taken-for-granted frames of reference (meaning perspectives, habits of mind, mind-sets), to make them more inclusive, discriminating, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action (Mezirow, 2000, pp. 7, 8).

Blending liberal humanist and postmodern perspectives and building on Mezirow's (1978) theory of transformative learning, Kegan (2009) characterises adults' learning and ways of knowing in terms of an evolutionary movement towards a "self-authoring mind" (Kegan, 2009, p.46) equipped to meet the challenges of modernism and postmodernism. For Kegan (2009), then, like Mezirow (2000), Brookfield (2000) and before them, Riegel, (1973), an adult's "way of knowing" or epistemology is characterised by the capacity for dialectical thinking, metacognition and the ability to "reform our meaning-forming" (pp. 44, 45)—or in other words, change our epistemologies.

Also from the humanist tradition of Adult Education, theorising about the self-directed nature of adults' learning has been one of the central themes of the adult learning literature in the last fifty or so years (Merriam et al., 2007), said to be legitimised by the work of Houle (1961), Tough (1971) and Candy, (2004). Self-directed learning is identified both as "a natural part of adult life" (Merriam et al. 2007, p. 110) and as the basis of lifelong learning (Brockett &Hiemstra, 1991), with self-directedness identified as a crucial component of an adult's "pursuit of meaning" (Merriam et al., 2007, p. 108) and transformative learning. Candy (1991) concluded that self-directed learning has four dimensions:

…self-direction as a personal attribute (personal autonomy); 'self-direction' as the willingness and capacity to conduct one's own education (self-management); 'self-direction as a mode of organizing instruction in formal settings (learner-control); and 'self-direction as the individual, non-institutional pursuit of learning opportunities in the 'natural societal setting' (autodidaxy) (Candy, 1991, p.23).

For Brockett and Hiemstra (1991) "optimal conditions for learning result when there is a balance or congruence between the learner's level of self-direction and the extent to which opportunity for self-directed learning is possible in a given situation" (Self-direction in learning, para 3). As such, self-direction continues to be a central and defining concept in the wider literature on informal adult learning, and in particular with reference to the intentionality of an adult's informal learning as distinct from learning that is incidental and unplanned—a theme prominent in theorising about the nature of adults' informal learning (as discussed in subsequent sections of the review). As will become evident in later sections of this review, the concept of self-directed learning has particular relevance for theorising about the nature of adults' informal learning in the digital age.

Finally, the concept of experiential learning has long held particular importance within the fields of Adult Education and Lifelong Learning (Colley, Hodkinson, & Malcolm, 2003; Merriam et al., 2007; Merriam & Caffarella, 1991) and in particular with reference to adults' everyday, informal learning (Colley et al., 2003; Fenwick, 2001; Jarvis, 2009). Experience is defined as an awareness of "external stimuli" (Jarvis, 2009, p. 30)—which can be either primary, direct personal experiences, or secondary, mediated experiences—that are subsequently internalised and thereby serve as a basis for learning. Exactly how and what we learn depends on a number of variables, however "as a result, we become changed individuals" (p. 30).

Viewed through a liberal-humanist lens, theorising about the experiential nature of adults' learning is linked to the concept of self-directed learning and draws heavily on the work of Kolb (1984), who is said to have, in turn, built on the thinking of

Dewey, Piaget, Jung, Lewin and Rogers to develop his experiential learning model (Biesta, 2009; Merriam et al., 1997; Illeris, 2006). Kolb's (1984) model, developed contemporaneously with Schon's (1991) work on reflection in-and-on-action, has been the basis for much of the subsequent theorising about adults' everyday learning. For example, Jarvis 2009), Brookfield (2000) and Mezirow (1991) have all built on Kolb's work to develop more complex models of experiential learning that emphasise the transformative nature of learning through "disjuncture" (Jarvis, 2009, p. 29), "critical reflection" (Brookfield, 2000 p. 89) and "perspective transformation" (Mezirow, 1991, p. 13). These are examples of constructivist perspectives on adult learning, where adults are seen as "active constructors of knowledge, creating new meanings and realities rather than ingesting pre-existing knowledge" (Fenwick & Tennant, 2004, p. 56).

2.4.1.2. *Conceptions of adults' (digital) literacy in the cognitive-psychological orientation*

Theorising about adults' literacy from the cognitive-psychological orientation emphasises the affordances of digital technologies and literacies for self-managed, self-directed, personalised and connected learning. Contrasting with conceptions of digital technologies and digital literacies reflected in theorising from the sociocultural-contextual orientation that emphasise technology and socio-technical practices, here the learner is viewed as an individual who is using digital technologies as a learning tool that is distinct from, and mediates, face-to-face learning interactions and that affords "lower level kinds of learning" related primarily to the acquisition of information necessary for "keeping up with change" (Candy, 2004, p. 312). Candy (2004) notes that in an increasingly digital world, the concepts of digital literacy and information literacy must naturally converge: "the ICT literate person must also be information literate, and vice versa" (p. 91). Bruce (2008a) elaborates on the relational approach to information literacy to develop her concept of informed learning—that is, "an interpretation of information literacy that focuses on people's experiences of information use" for learning (Bruce, Sommerville, Stoodley & Partridge, 2013, p. 225, 227) rather than as a process or set of skills or behaviours[26]. It refers to "using information, creatively and reflectively, in order to learn" (Bruce, 2008a, p. ii).

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[26]   Elsewhere referred to as relational informed learning theory (Partridge, Bruce &Tilley, 2008).

More recent theorising expands on these ideas, suggesting a wholesale reconceptualization of what it means to be literate in the digital era. Rajala, Hilppo, Lipponen and Kumpulainen (2013, pp. 120-1) propose that "questioning current practices and seeing alternative possible futures is an important way to develop social practices, resolve contradictions and launch expansive learning...[thereby] connecting learning across settings, communities and time". Advocating the re-connection of literacy with "artistic endeavours" (pp. 120-1). Nelson, Hull and Young (2013) propose that, in order to "loosen the deficit-oriented straightjacket that adult learning often wears", we need to "add the words 'creativity' and 'imagination' to our theoretical and practical vocabularies, both when thinking about new literacies and when thinking about adults" (p. 217). They propose that adults, by virtue of their rich stock of life experiences, memories and connections that they can draw on, may well have a "significant advantage in the development and practice of new media literacies" (Nelson et al., 2013, p. 229). They recommend a reconceptualisation of adult literacy that goes beyond the functional and remedial to consider a conception of new media and new literacies that includes "combination, recombination and reconfiguration of available resources for making meaning" and potentially, for transformational learning (2013, pp. 229-230).

2.4.2. Theorising from the sociocultural-contextual orientation

The sociocultural-contextual orientation highlights the situated and social nature of learning as it is afforded by and occurs through people's participation in social activities, networks and sociocultural practices, highlighting:

1. The centrality of social relations, social networks and interactional infrastructures.
2. The links between individual and collective learning and between everyday activity and learning, including participation in paid and unpaid

work, social and civic engagement, communities and networks of interest and practice.

3. The learning barriers and affordances[27] of social, sociocultural and socio-technical environments[28], infrastructures, practices and artefacts.

As summarised in Table   2-1, theorising in the sociocultural-contextual orientation emphasises the interaction dimension of adults' learning (Illeris, 2007), concerned with the development of the learner's "sociality" through "action, communication, co-operation…and integration" (Illeris, 2007, p. 27). Here, learning is seen as a function of social participation (Wenger, 2009), where diverse contexts, environments and practices are seen to have particular learning barriers and affordances (Billett, 2002a, 2002b). Field (2005) notes the relevance of emerging social models of learning such as Communities of Practice (Lave & Wenger, 1991) for understanding learning in the social context and identifies an emphasis in these theories on "interdependency, communication, reciprocity and values as central prerequisites for learning" (p. 119). Theorising about the nature of learning from this orientation considered important for the study is now briefly summarised.

2.4.2.1. *Situated, social and sociocultural theories of adults' everyday learning*

Drawing on social capital theory (Bourdieu, 1986; Putnam, 2000) and social network theory (Granovetter, 1973), Field (2005) argues that people's social networks and relationships "play a vital part in their capacity for learning" (p. 4). Adopting Schuller et al.'s (2001, as cited in Field, 2005 p. 4) definition of social capital as "social networks, the reciprocities that arise from them and the value of these for achieving mutual goals", Field (2005) notes that "tacit knowledge in particular appears to be created on a shared basis and transmitted most efficiently where people know and trust one another" (p. 14). He notes further that such close, "bonding ties" (Field 2005, p.

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[27]   The term learning affordance refers to a situation, tool, feature or circumstance, or combination thereof, that presents) a learning opportunity, invites or facilitates learning; conversely, a learning barrier is something that constrains or prevents learning from occurring.
[28]   The term "socio-technical" refers to "the mutual constitution of social relations and technologies" whereby "technological artefacts are enmeshed in our activities and our connections to other people" (Tuominen, Savolainen & Talja, 2005 pp. 338, 339). A "socio-technical environment" (Fischer, Rohde, & Wulf, 2009, p. 77) is therefore an environment in which these relations and "dependencies" (Tuominen et al., 2005 p. 339) are thematised.

14) are most likely to facilitate the transfer of tacit forms of knowledge. On the other hand, Jarvis (2005, pp. 32, 33) notes that "bridging and linking social capital" are seen to afford access to "new ideas, information and skills", provide opportunities for "reflexive learning" and promote links with formal education, training and employment opportunities. This theorising resonates with and is considered particularly important for understanding learning in GraniteNet, as is situated learning theory (Brown, Collins & Duguid, 1989; Lave, 1991; Lave & Wenger, 1998).

Lave and Wenger's (1991) community of practice model, which is based on situated learning theory (Brown et al., 1989; Lave, 1996), theorises learning as a function of participation in communities of practice. As such, learning is seen to be situated in practice rather than as knowledge and skills acquired in a dedicated learning environment that are subsequently applied in a different practice setting. Wenger defines a community of practice as "a group of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (Wenger 2007, para.2), noting that from a community of practice perspective, learning can be both intentional and incidental. In a community of practice, learning is related to a sense of identity and shared meaning and involves members learning through a process of "legitimate peripheral participation" in the community that, over time and with the support of more knowledgeable and experienced others, "gradually increases in engagement and complexity" (Lave & Wenger, 1991, p. 3).

More recently, Wenger (2009) has referred to the concept of community of practice as "a point of entry into a broader conceptual framework of which it is a constitutive element" (pp. 210-212): that of learning as social participation. For Wenger (2009), social participation refers to "processes of being active participants in the *practices* of social communities and constructing *identities* in relation to these communities" (p. 210) [emphasis in original]. As such, Wenger (2009) is adopting a strongly Vygotzkian sociocultural orientation also reflected in the theorising of Rogoff (2005), who theorises learning in terms of human development in three "planes of analysis"—"personal, interpersonal and community"—as apprenticeship, guided participation and participatory appropriation" (Rogoff, 2005, p. 139) respectively. Whilst the focus of this theorising is human development in the context of interactions between children and adults in their sociocultural communities, Rogoff's (2005) analysis is helpful in terms of informing our understandings about the socio-cultural

nature of adults' learning in the context of communities of practice, with implications for understanding learning in GraniteNet as social learning in a community of practice.

Also included in the sociocultural-contextual orientation and considered important for understanding learning in GraniteNet is a socio-cultural theory of learning that proposes that "individuals influence and are part of learning cultures just as learning cultures influence and are part of individuals" (Hodkinson, Biesta & James, 2008, p. 37). This theorising echoes the work of Billett (2006) who theorises workplace learning as learning through participating in workplace practices and thereby contributing to the remaking of workplace culture. According to Hodkinson et al. (2008), understanding learning culturally "can be used to generate better questions, which could lead to new ways to improve both the value and effectiveness of learning, in many situations" (p. 44).

2.4.2.2. *Theorising adult literacy as a social and socio-technical practice*

Theorising about learning from a sociocultural-contextual perspective emphasising participation in social practices highlights the crucial link between (digital) information literacy and learning referred to earlier by Candy (2004), but where literacy is seen as a "fundamentally a social act" and therefore as being "contextual, authentic, collaborative and participatory" in nature (Lupton & Bruce, 2010, p. 5). Viewed from a sociocultural perspective, the interface between community and technology presents both new challenges and new opportunities for the so-called "new-literate lives" of adults in a digital age (Nelson et al., 2013, p. 216). Here, digital technologies are viewed as socio-technical environments and practices and digital literacy—as an instantiation of the traditional concept of literacy—as a socio-technical practice. From a community of practice perspective, Wenger et al. (2009) describe the social shaping of technology through community with reference to "digital habitats" in which understanding and learning how to lead, guide and manage the dynamics of the digital habitat requires a new kind of literacy: "a flexible understanding about how digital habitats can serve the learning of communities" (Wenger, 2009, p. 184).

Wenger et al. attribute this responsibility to the role of the *technology steward*[29] requiring the following literacies:

- community understanding;

- technology awareness;

- decision-making, selection and installation of required technologies;

- shepherding of the community through adoption and transition; and

- guiding, managing and administrating everyday use of the digital habitat and its tools by members (Wenger et al., 2009 pp. 26-27).

These perspectives on literacy as a sociotechnical practice have significant implications for investigating and theorising learning in the context of people's participation in local associational life in a digital era and information age. For example, a number of Australian and American researchers are investigating the information literacy experiences of people in the context of their everyday lives in their local communities, referred to as Community Information Literacy (CIL) (Partridge, Bruce & Tilley, 2008). These studies into the information behaviour of particular social groups have investigated older Australians and their experiences of health information literacy; informed learning in church communities; community members' experience of social media for learning in natural disasters; the information needs of people with long-term physical disabilities; the experience of information literacy in particular ethnic and indigenous communities; and using information for learning related to leisure and hobbies (Bruce, Abdi, & Stoodley, 2013; Bruce & Davis, 2014; Hughes, Middleton, Edwards, Bruce & McAllister, 2005; Partridge et al., 2008). With important implications for understanding learning in GraniteNet, Gunton et al. (2014) conclude:

> The emerging appreciation for what it means to be information literate anticipates an alternative pathway for informal learning experiences by which individuals become self-aware about how they learn, together with how they may use information effectively. This

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[29]   "Technology stewards are people with enough experience of the workings of a community to understand its technology needs, and enough experience with or interest in technology to take leadership in addressing those needs. Stewarding typically includes selecting and configuring technology, as well as supporting its use the practice of the community" (Wenger et al., 2009, p. 25).

could blaze a new trail for researchers and practitioners alike in developing lifelong learners (p. 96).

2.4.3. Theorising from the existential-developmental orientation

As summarised in Table   2-1, theorising from the perspective of the existential-developmental orientation emphasises:

1. The centrality of the learner's personal values, biography, dispositions and autonomy for their informal, everyday learning as personal development.

2. The links between the learner's life roles, transitions and trajectories and their learning trajectories, and concomitantly, a focus on lifelong and life-wide learning and the links between formal, non-formal and informal learning.

3. The differential experiences of and opportunities for learning afforded by structural factors including access to and effective use of learning technologies and infrastructures, such as the so-called digital and learning divides referenced in Chapter 1.

Theorising from this orientation is strongly influenced by perspectives from Sociology, conceptualising adult and lifelong learning in terms of learning lives (Erstad & Sefton-Green, 2013; Tedder & Biesta, 2009), learning careers (Hodkinson et al., 2008), learning transitions (Field, Gallacher & Ingram, 2009) and learning trajectories. From this perspective, life itself is seen as a learning context (Edwards, 2009; Erstad & Sefton-Green, 2013) and the self as learning content (Illeris, 2007), with learning focused on individuals' development of "a coherent understanding of the different matters in existence" (Illeris, 2007, pp. 25-26). Thus, the content dimension of learning is emphasised, but "understood far more broadly than the usual pedagogical idea of knowledge, skills and attitudes" (Illeris, 2007, p. 51). Seen from the perspective of the existential-developmental orientation, learning content encompasses personal development learning, learning to learn, learning to adapt to and manage change, and learning to negotiate life trajectories and manage life transitions as *abilities* that enable us to tackle the practical challenges of life" (Illeris, 2006, p. 25). Theorising

about adults' everyday learning from this orientation considered particularly important for the study ais now briefly elaborated.

2.4.3.1. *Adults' learning lives*

Looking to the wider discourses of lifelong and life-wide learning in the context of the learning society as it is framed in Europe and the United Kingdom (Boshier, 2005; Merriam et al., 2007; Selwyn, Gorard, & Furlong, 2006), attention is drawn to theorising about adults' learning in terms of its biographicity—that is, the capacity to "learn within and through one's life history" through an iterative and reflexive process of making meaning of, narrating and thereby "perceiving" and leveraging "the potentialities of our unlived lives" (Alheit, 2009, p. 125) to become ourselves as persons in society (Jarvis, 2009; Edwards et al., 2002). As part of this reported "wider biographical turn in adult education research" (Ingram et al., 2009, p. 5), Edwards et al. (2002) propose a "reflexivity theory of lifelong learning", whereby "in adopting a learning approach to life, one is able reflexively to negotiate a trajectory through the insecurities and risks associated with change processes" through "the development of reflexive practices within learning relationships" (Edwards et al., 2002, p. 531). This includes being "open to hearing other voices" and having an orientation to "dialogue rather than introspection" and also to being "oriented to self-evaluation and re-formation of purposes and available resources" (Edwards et al., 2002, pp. 531, 533). To this list of capacities and dispositions, Tedder and Biesta (2009) add the need for individuals to be "narrative learners" in the sense that they are able to learn through a process of talking about and reflecting on their life experiences, so that the narrative process itself becomes a "site for learning" (p. 89). From this perspective, all of life becomes a learning context (Edwards, 2009; Erstad & Sefton-Green, 2013).

Although criticised as being decontextualized, overly individualistic in focus and rational in orientation (see for example, Fenwick & Tennant, 2004; Hodkinson & McLeod, 2007), these perspectives nonetheless view learning "as part of a very wide range of social processes" (Erstad & Sefton-Green, 2013, p. 3) and are therefore considered important for the purposes of this inquiry into participants' conceptions and experiences of learning in the context of their involvement in the associational life of their local communities.

2.4.3.2. *Theorising about adults' digital literacy learning as a mechanism for individual and social transformation and empowerment*

One of the "different matters in existence" (Illeris, 2007, p. 25) with particular import for the GraniteNet study is the question of how people deal with the implications of the proliferation of digital technologies and the Internet for living—and learning—their lives. From this perspective, digital technologies are viewed in terms of questions of structure and agency, emphasising, on the one hand, issues of access and equity related to the digital divide, such as information inequality, and on the other hand, the use of digital technologies for individual and collective empowerment and social transformation. Lupton and Bruce (2010) characterise the transformative perspective of literacy in the following terms.

> The transformative perspective goes beyond sociocultural practice by being concerned with emancipatory processes and outcomes. The basis of a transformative perspective is that to be literate is for individuals and groups to be empowered to challenge the status quo and to effect social change. Within this view, literacy can be considered as critical, consciousness-raising, subjective, political, empowering and liberating (Lupton & Bruce, 2010, p. 5).

From this fundamentally Freirean perspective of adult literacy, digital literacy is conceptualised as the appropriation of ICTs for individual and social change and transformation, potentially providing ways forward for understanding and conceptualising "new literacies" that "go beyond lists of competencies…to capture…the nature of what is new" (Nelson et al., 2013, p. 216). As stated by Lupton and Bruce (2010), "the idea of the social includes seeing information literacy both as a social practice and as a way of transforming society" (p. 8). However, Lupton and Bruce (2010) also note that "to experience literacy as transformative, one must have the capabilities associated with *generic* literacy" and "to experience literacy as 'critical reflection', one would need to reflect upon the experience of applying skills and knowledge, and upon the personal, professional and social implications of applying skills and knowledge" (p. 6). This, in turn, implies having both the opportunities and the capabilities to do so, as elaborated by Erstad (2008):

> Digital technologies create new possibilities for how people relate to each other, how knowledge is defined in negotiation between actors and how it changes our conception of learning environments in which actors make meaning. Empowerment is related to the active use of different tools, which must be based upon the prerequisite that actors have the competence and critical perspective on how to use them for learning. Literacy, seen in this way, implies processes of inclusion and exclusion. Some have the skills and know-how…others do not (Erstad, 2008, p. 181).

Thus, theorising about adults' (digital) literacy in the existential-developmental orientation necessarily draws on perspectives from the cognitive-psychological orientation that emphasise the importance of foundation and generic literacies for learning and the exercising of critical reflection. It also draws on theorising from the sociocultural-contextual orientation with respect to the challenges and opportunities presented by digital technologies for the "new-literate lives" of adults in a digital age (Nelson et al., 2013, p. 216), thereby reiterating the challenges of the aforementioned digital and learning divides highlighted as issues of particular interest for this study.

2.4.4. Differentiating adult learners and their diverse conceptions and experiences of learning

Whilst such attempts to theorise about adult learners and adult learning are important for the purposes of contextualisation and delimitation, it is important to remember that "there is no generic, essentialised 'adult learner' who can be described in ways that accurately and responsibly portray the myriad differences between people and the changes they experience" (Fenwick & Tennant, 2004, p. 55) As noted by Findsen (2006) "contemporary Western societies are today much more complex and subject to social change than those wherein social norms for older adults' patterning of their lives were originally established" (p. 67). From a structural perspective, Colley et al. (2003) concur, noting that "privileged social groups enjoy a seamless integration of different types of learning that is denied to the disadvantaged (Colley et al., 2003, p. 109). These so-called disadvantaged include, among others, older, "third age" (Laslett, 1991) learners for whom "learning plays a key role in successful ageing" (Findsen, 2006, p. 69); adults with significant disabilities; adults from culturally and linguistically diverse backgrounds including migrants, refugees and seasonal workers;

and younger adults or "youth learners", described by Choy and Delahaye (2003, p. 1) as "the authentic neglected species learning for an unknown future". The unique experiences of men's and women's learning and ways of knowing have also been the subject of research (see for example Golding 2009; Baxter Mogolda, 1992 and Belenky et al., 1986, as cited in Merriam et al., 2007).

Consistent with the principle of instantial relevance that guides this review of the literature (Usher & Bryant, 1989), research focused on the particular learning-related conditions, needs and characteristics of such adult learner sub-groups is reviewed in subsequent sections of this chapter, contextualised to specific practice settings. As the next stage in the situated field of study approach to the literature review, the focus now turns to the question of formality and informality in theorising in the literature about the nature of adults' everyday learning, with specific reference to theories and models of informal learning.

2.5.   Defining and Theorising Informal Adult Learning

The quest for clarity about how adults' everyday learning should be defined and theorised necessarily leads to the question of formality and informality in learning, with an emphasis on differentiating informal learning from formal education, and raising the question as to how "everyday learning gain[s] legitimacy as it struggles with other competing definitions" (Erstad & Sefton-Green, 2013, p. 15). Marsick and Watkins (2001) see informal adult learning to be located "at the heart of adult education because of its learner-centred focus and the lessons that can be learned from life experience" (p. 25). However, McGivney (2006) notes that adult educators are often confused about what is meant by the term informal learning. A review of definitions and conceptions of informal learning found in the literature with instantial relevance to the GraniteNet study is now used as a point of departure for a review of theorising about adults' informal learning in a digital era.

2.5.1. Attributes of formality and informality present in all adult learning situations?

In their extensive research report to the English Learning and Skills Research Centre on non-formal learning, Colley et al., (2003) drew on the European

Commission's (2001) classification of three types of learning: *formal, non-formal and informal*, which they defined as follows:

> *Formal learning*: learning typically provided by an education or training institution, structured (in terms of learning objectives, learning time or learning support) and leading to certification. Formal learning is intentional from the learner's perspective.

> *Non-formal learning*: learning that is not provided by an education or training institution and typically does not lead to certification. It is, however, structured (in terms of learning objectives, learning time or learning support). Non-formal learning is intentional from the learner's perspective.

> *Informal learning*: learning resulting from daily life activities related to work, family or leisure. It is not structured (in terms of learning objectives, learning time or learning support) and typically does not lead to certification. Informal learning may be intentional but in most cases it is non-intentional (or "incidental"/random). (European Commission, 2001, cited in Colley et al., 2003, p. 8).

To guide their analysis, Colley et al. (2003) used four "aspects of formality and informality—*process, location and setting, purposes and content*" (pp. 30-31) [emphasis in original]—as organising concepts to explore attributes of informal learning in various learning settings. An important aspect noted by Colley et al. (2003) in their review was the centrality of theorising about the different types of knowledge that tends to characterise formal and informal learning in the literature. For example, highlighting the influence of Bernstein's (1971) horizontal and vertical knowledge discourses and Gibbons, et al.'s (1994) Mode 1 and Mode 2 knowledges (as cited in Colley et al, 2003, p. 7), Colley et al. (2003) noted that particular types of knowledge are not necessarily "straightforwardly linked to formal or informal learning contexts" (p. 45). They found that conceptions of formal and informal learning in the literature emanated from two competing paradigms with both theoretical (epistemological) and political roots. They point on the one hand to the tendency of Education theorists, and in particular, those focusing on learning in educational institutions, to value formal "high status" knowledge and theory over every day, "context-specific" and practical

knowledge. They contrast this with perspectives emanating from a sociocultural or situated paradigm, and in particular, with theorising from scholars of workplace and community learning, in which informal, contextualised learning is seen as being superior to formal learning (p. 6). Colley et al. (2003)concluded that:

1. There is no clear difference between informal and non-formal learning, with both terms used interchangeably in the literature.
2. It is not possible to separate out informal/non-formal learning from formal learning in ways that have broad applicability or agreement.
3. It is more sensible to see attributes of informality and formality as present in all learning situations (Colley et al., 2003, p. iv).

Rather than adopting Colley et al.'s (2003) tri-part definition for the purposes of this review, this researcher prefers to use the term "informal learning" as her point of departure to refer to the learning that adults undertake in the course of their everyday life activities, with a focus on learning through participation in community and associational life in the digital era. In the following sections, theorising about the nature of adults' informal learning considered most important for the GraniteNet study are highlighted, including: the importance of learner self-direction, intentionality and awareness; the utility of process-driven models from studies of organisational and workplace learning; and a socio-personal theory of informal learning as an ongoing transaction between the learner and his or her context.

2.5.2. The importance of learner self-direction, intentionality and awareness for theorising about the nature of informal learning

Also building on the European Commission's (2001) aforementioned three-way classification of formal, non-formal and informal (as cited in Colley et al., 2003), Jarvis (2009, p. 52) developed his typology of "possible learning situations", shown here in Table 2-2. Focusing on learning *setting* and *type*, Jarvis (2009) illustrates his conception of the "learning situations of everyday life", in which "both intended and unintended learning can occur in the same situation, whether it is formal, non-formal or informal" (p. 52) [emphasis added]. As such, Jarvis (2009) agrees with Colley et al. (2003) that it makes sense to "see attributes of informality and formality as present in all learning situations" (Colley et al., 2003, p. iv).

Table 2-2
Jarvis' Possible Learning Situations (Jarvis, 2009)

Type of situation	Type of learning	
	Intended	Incidental
Formal	Institution-based formal education and training	Unintended, incidental learning in formal education and training settings
Nonformal	Intentional, supported workplace and community based learning	Unintended, incidental learning in workplace and community settings
Informal	Intentional, self-directed learning in everyday life	Incidental, everyday learning

Like Colley et al.'s (2003) definition, Jarvis' (2009) typology emphasises questions of learner self-direction and intentionality, which are found to be central to theorising in the literature about informal adult learning. In their report for Futurelab's Adult Informal Learning Project, Hague and Logan (2009) acknowledge the definitional debate in the literature and adopt Schugurensky's (2000) definition: "self-directed learning that happens outside the curricula of formal and non-formal education institutions and programs" (p. 2), which is consistent with definitions adopted in the literature on informal learning in the context of volunteer work from the USA and Canada (see for example, Carroll & Farooq, 2009; Livingstone, 2001, 2007), and which uses the constructs of self-direction and intentionality as definitional touchstones.

From the perspective of informal learning in volunteer work and social action, Duguid, Mundel and Schugurensky (2013, p. 118) emphasise the importance of making a distinction between "informal learning as a setting and informal learning as a process" and maintain that the two are often conflated in discussions about informal learning. This point is significant for investigating informal learning in the context of the GraniteNet case study, with respect to the need for clarity about exactly what it is that is being investigated.

The following section deals with theorising about informal learning as a process, drawing primarily on cognitivist perspectives from studies of organisational and workplace learning. Key constructs from theorising about informal learning considered particularly important for this research are highlighted, including questions

of learner self-direction, intentionality and awareness. The question of the formality or informality of the learning "*location and setting, purposes and content*" (Colley et al., 2003, pp. 30-31) [emphasis in original] is also an important consideration contributing to an overall understanding of the dynamics of informal learning in GraniteNet and is considered in subsequent sections of the review.

2.5.3. Process-driven models of informal learning

In a movement away from definitions of informal learning focusing on the learning setting that tend to use formal education as their point of departure, researchers in Canada and the United States have developed models of informal learning based on empirical research into learning in organisational and workplace settings and in community based volunteer work that instead focus on theorising nature of the learning process in terms of *form* and *modality*. A well-cited example from this literature is Schugurensky' (2000) tri-part model of informal learning, which has since been further developed by Bennett (2012) into a four-part model. Schugurensky's (2000) original tri-part model presented in Table   2-3 focuses on distinguishing different learning modalities in terms of the learner's intentionality and awareness. He pointed out that on the spectrum of informal learning, "self-directed learning is at one extreme…socialization is at the other extreme, and incidental learning is somewhere in between" (p. 5).

Table   2-3
Schugurensky's Original Tri-part Model of Informal Learning (Schugurensky, 2000)

Form	Intentionality	Awareness (at the time of learning experience)
Self-directed	yes	yes
Incidental	no	yes
Socialization	no	no

The question of the extent to which informal learning is intentional or incidental, and something of which the learner is consciously aware, or unconscious or unaware, is thematised in the literature on informal learning that focuses on learning as a process and is explored in detail by Bennett (2012), Marsick and Watkins (1990, 2001) and Schugurensky (2000). Characterising their conception of informal learning as "Informal and incidental learning", Marsick and Watkins (2001) state that:

Informal and incidental learning…are the most pervasive forms of adult learning…and take place wherever people have the need, motivation and opportunity for learning…. When people learn incidentally, their learning may be taken for granted, tacit or unconscious. However a passing insight can then be probed and intentionally explored" (Marsick & Watkins, 2001, p. 26).

From a strongly cognitivist orientation, Eraut's (2004) typology of informal learning draws on his research into learning in the workplace, differentiating between "implicit learning", "reactive learning" and "deliberative learning" (p. 250). Importantly, Eraut (2004) makes a distinction between activities that have an explicit learning-related goal, and those where learning is a by-product of (or incidental to) other goal-focused activity, a distinction that becomes important when considering how informal learning occurs in different practice settings such as GraniteNet.

What distinguishes these models is their focus on the learning process as distinct from the setting, and without the need to differentiate between formal and informal learning, making it possible to theorise about the processes of adult learning, as modalities, regardless of the setting and degree of formality or informality. This potentially provides a more robust theoretical framework for understanding the nature of adults' informal learning from a cognitive-psychological orientation that uses the learner's intentionality and awareness as definitional touchstones, echoing the thinking of Mezirow (2000), for whom learning is understood as:

[T]he process of using a prior interpretation to construe a new or revised interpretation of the meaning of one's experience as a guide to future action… may be intentional, the result of deliberate inquiry; incidental, a by-product of another activity involving intentional learning; or mindlessly assimilative. Aspects of both intentional and incidental learning take place outside learner awareness (Mezirow 2000, p. 5).

As noted by Livingstone (2001) and with implications for investigating learning in GraniteNet, "the boundary between intentional and tacit informal learning has only begun to be explored….We learn while we act continuously. To distinguish learning

components from other aspects of our everyday practices can be extraordinarily difficult" (p. 21).

2.5.4. Theorising a socio-personal conception of informal learning

Asserting that there is "currently no adequate theory of informal learning", Hager and Halliday (2006) propose a theory of informal learning as "the developing capacity to make context-sensitive judgments during ongoing participation in practices of various kinds" (p. 216). Drawing on Dewey's (1938, 1997) transactional theory of learning and Castells' (2000) network society thesis, they theorise learning as an essentially transactional phenomenon that takes place between the learner and his or her context where both learner and context are changed as a result (Hager & Halliday, 2006, p. xxi). Putting forward their theory as "a paradigm case of informal learning", Hager and Halliday (2006) propose that informal learning is "indeterminate, opportunistic and contingent" involving "internal and external goods" and that it is "an ongoing process of evolution and becoming" (pp. 217-219) rather than a sequence or sequences of acquisition events. Importantly, Hager and Halliday's (2006) perspectives on the nature of informal learning have been developed primarily in the context of vocational learning and workplace practices, which they admit differ in important ways from "wider societal practices" (p. 217), such as those related to everyday participation in community and associational life, for example (although they do go on to extend their theorising into that domain).

Hager and Halliday's (2006) theorising about the nature of informal learning resonates with the thinking of workplace learning scholar Stephen Billett (2010), who refers to his desire to "account for the personal more strongly in theories of learning" by explaining adults' learning in workplace settings and beyond as "the broader project of learning as an ongoing process throughout our everyday thinking and acting and across and throughout our lives" and specifically, adopting a "socio-personal conception of learning" that helps to clarify the "significance of the relationship between the personal and social" (p. 231). This in turn resonates strongly with Jarvis' (2009) idea of *Learning to be a person in society*, which "places the person at the centre of all thinking about learning" (p. i) and is reflective of more recent theorising about adults' learning in everyday life in contemporary society (Illeris, 2007, pp. 3-4) as a broad concept and highly complex phenomenon involving "much more than the

traditional conception of learning as acquisition of knowledge and skills", behaviour change or problem-solving.

2.5.5. A provisional theory of informal adult learning to guide the GraniteNet study

In the interests of devising a working definition of informal adult learning for the purposes of the GraniteNet case study, the author is comfortable with the propositions that mature adults learn differently from children, and indeed from adolescents and "youth learners"(Choy & Delahaye, 2003, p. 1) by virtue of their life experience, biographies and social roles along with their more developed or mature ways of thinking and knowing. This includes a capacity for critical reflection, or reflexivity, dialectic thinking and autobiographicity (Alheit, 2009).

Returning to the concept of the everyday (Habermas, 1987), a conception of informal adult learning is proposed that reflects ideas from the traditional Adult Education scholarship; that is, that the adult learner is inherently self-directed in her activity with learning in adulthood "characterized by an interaction between the adult and his or her lifeworld" (Merriam et al., 2007, p. 427) involving both intentional and incidental forms and modalities, and both tacit and explicit knowledge. This researcher agrees that informal learning is everyday learning involving the interpretation of new experiences "in terms of earlier ones and relat[ing] new information to existing knowledge"(Marton & Booth 1997, p. 24), and that it constitutes "the hidden curriculum of adult life" (Kegan, 2009, p. 40) or "submerged bulk of the iceberg of adult learning both in terms of its visibility and significance" (Tough, 1978, cited in Selwyn, Gorard& Furlong, 2006, p. 8). This researcher also concurs with Merriam et al. (2007), and Carroll and Farooq (2009) that "informal learning contexts, including social action and community-based learning, are where much of adult learning takes place [and that as adult educators and researchers]…we need only see them as sites for learning" (Merriam et al., 2007, p. 430) to be able to explore and better understand, and make visible, the dynamics and complexity of informal adult learning. One such complexity is the question of the impact of digital Information Communications technologies and the Internet on informal adult learning, a question to which attention is now given.

2.6.   Informal Adult Learning in the Digital Era: The Rise of an Informal Learning Society?

Almost universal acknowledgement in the literature of the "staggering…effect of the global economy and technology advances on the nature of adult learning" (Merriam et al., 2007, p. 26) and of lifelong learning more broadly (Erstad & Sefton-Green, 2013) helps to set the scene for a review of the literature on informal adult learning in a digital age that needs to inform this study. Referring to "the potential of technology for enhancing or impeding learning" Merriam et al. (2007, p. 26) flag the central issue of the ambivalence of the technology-learning relationship evident in the literature in the sense of whether it is ultimately for better or for worse for adult learning. In this section, literature dealing with the interface between informal adult learning and digital technologies is reviewed to reveal celebratory, critical, cautiously optimistic and ambivalent perspectives on the question posed by Merriam et al. (2007).

2.6.1. An overview of perspectives from a decade of research (2003-2013): The Adult Education researcher as digital immigrant?[30].

Whilst research into "new informal ways of learning" in the context of emerging digital technologies and environments is said to be "still in its infancy" (Sangra & Wheeler, 2013, pp. 228, 291), inquiry into the impact of digital technologies and the Internet on informal adult learning was the topic of a "Trends and Issues Alert" from the Eric Clearinghouse on Adult, Career and Vocational Education in 2003 (Imel, 2003). Journal articles from the fields of Adult Education, Lifelong Learning, Workplace Learning, and e-Learning/Online Learning from the US, UK, Europe, Canada, Australia and New Zealand between the mid to late 1990's and early 2000's were reviewed. Celebrated in this literature were the affordances of the technologies as a tool for adults' independent, self-directed, self-managed, constructivist learning through provision of access to information and learning resources and opportunities for interaction and engagement with others in a range of informal learning settings including the home, the workplace and the community[31].

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[30]   Digital immigrants are described by Prensky (2001) as those who were not born into, but who have learned to adapt to, the digital world and who have "a digital immigrant accent" or "foot in the past" (p. 2).

[31]   Gray (1999); Boshier & Pisutova (2002); Wilson and Lowry (2000); Berg (1999); Weintraub, (1998); Hazzlewood, (2001); Sawchuk (2001); Egan (2002),as cited in Imel, (2003).

Concerns were also identified about access to digital technologies and the internet (raising the spectre of the digital divide), the negligible extent to which adults' participation in lifelong learning was seen to be enhanced by ICTs, and an "apprehensiveness" about "uncontrolled learning" and "fragmentation of learning" (Imel, 2003, p. 1). Concerns about the power of those with vested interests to control and influence the nature and quality of the information provided to learners via these media were also highlighted (Bruce, 2001; Downes, 2001; Gorard, Selwyn & Madden, 2003; Gray, 1999; Jarvis, 2000, as cited in Imel, 2003). Imel's (2003) review also highlighted a concern among scholars about a lack of research in the area targeted specifically to understanding and theorising the relationships between informal adult learning and digital technologies (Boshier & Pisutova, 2002; Gray, 1999, as cited in Imel, 2003)—a concern also highlighted by Candy (2004) and Merriam et al. (2007) in relation to the impact of technology on adults' self-directed learning.

With the proliferation of digital technologies and the internet in the ensuing decade, increasing numbers of Adult Education researchers have specifically turned their attention to addressing this knowledge gap, among them Candy (2004), Edwards, et al. (2009), Wenger, White and Smith (2009) and Selwyn et al. (2006). Other scholars deal with the question of the digital technologies-informal learning interface as part of a broader analysis of adult and lifelong learning, including Merriam et al. (2007), Field (2005) and Foley (2004) and his colleagues. There have also been important works on informal adult learning whose authors have chosen not to explicitly address the question of the impact of emerging digital technologies, such as Colley et al.'s (2003) much cited report on non-formal learning and Hager and Halliday's (2006) book, *Recovering Informal Learning*. In contrast, Selwyn (2014) tackles the question head-on in his 2014 monograph *Distrusting Educational Technology* in which he presents a challenge to Cross's (2007) celebratory account of informal, technology-enhanced workplace learning.

Looking more broadly, one can find much in the way of so-called "grey literature"[32] on the role of digital technologies in supporting adult informal and lifelong

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[32]   The so-called "Prague Definition" (Schoepfel, 2010) defines grey literature as a term collectively describing different types of documents produced by governments, academics, business and industry that are of sufficient quality to be collected, stored and disseminated by libraries and other repositories but that are not controlled by commercial publishers.

learning from organisations such as Futurelab in the UK (Hague & Logan, 2009), Europe's *Learnovation* project (Jokisalo & Riu, 2010), the IFLL thematic papers on adult learning and technological change from the United Kingdom (Easton, 2014; Mauger, 2009) and Australia's National Centre for Vocational Education Research (NCVER, 2009). All of these point to both benefits and risks of new technologies for adults' informal learning along similar lines to the findings of the aforementioned earlier research reported by Imel (2003). NIACE's (2009) "Inquiry into the Future of Lifelong Learning Thematic Paper 2 on Technological Change" summarises the current state of the debate as follows:

> The optimistic view is that technology offers significant potential for the development of new approaches to education and for a new relationship between formal and informal learning. The pessimistic view is that perceived benefits of the personalisation of learning— and individual control—are illusory, such that "personalisation" will increasingly be dictated by a toxic combination of mass movements and concerned with self-interest at an industrial level. Those examining the future of lifelong learning must better understand how such developments relate to the integration of knowledge, creativity and innovation into lifelong learning practice at all levels. (Mauger, 2009, p. 5)

The complex and confounding question of the impact of digital technologies and the Internet on adults' informal learning is central to investigating learning in GraniteNet and is therefore explored in more detail in the following sub-sections via a comparison of contrasting perspectives drawn from a review of reports of conceptual and empirical research on the topic published since 2003.

2.6.1.1. *Utopian visions: Lifelong learning networks, digital habitats, technology-enabled practices and free range learners*

The optimistic vision of adult learners benefiting from increased opportunities for self-directed lifelong learning and a convergence of formal and informal learning opportunities in the digital era is one shared among a number of scholars. This thinking aligns with Livingstone's (2001) view (as cited in Merriam et al., 2007) that "the proliferation of information technologies and exponential increases in the production

of information have created greater opportunities for informal learning…for people in all walks of life" (p. 21), suggesting that we may actually be "witnessing the emergence of…the learning society…that takes human beings rather than educational institutions as its beginning point" (p. 25).

Brown and Adler (2008) maintain that "the most profound impact of the internet…is its ability to support and expand the various aspects of social learning" (p. 18). Drawing on Granovetter's (1973) concepts of "strong" and "weak" social ties, networked learning "focuses on the diversity of social relationships people develop, what strategies they use to maintain them, and the value this creates for learning" (De Laat & Schreurs, 2013, p. 4). Adopting a technology practices conception but with an emphasis on community, Wenger and White's (2009) communities of practice perspective—"seeing technology through community, domain and practice" applies an ecological metaphor to theorise the concept of "digital habitats" (pp 10-11). Reflecting what some would see as the dominant discourse of "networked individualism" (Stillman & Denison, 2014, p. 8), Siemens (2005) and Downes (2005) draw on insights from the field of Cognitive Neuroscience to elaborate the theory of connectivism, where learning is more about pattern-recognition than information processing and where most learning occurs "in the network" as a "continual and embedded process" of individual "connection-making" and collaborative construction "where capable, self-aware learners" are able to draw on online networks, information and resources to "identify and meet their own knowledge needs" (Siemens, 2005, pp. 16-18). In the fields of Organisational and Workplace Learning, concepts of learning networks, ecologies and ecosystems are also used to theorise the nature of informal adult learning in a digital information age (Brown & Adler, 2008; Cross, 2007; De Laat & Schreurs, 2013).

The validity of the image of the empowered, self-directed "free range" adult learner "foraging for information" and "plugging in to learning sources" in a digital age (Siemens, 2005, p. 20) is a question to which some adult education scholars have turned their attention and sought to investigate through formal study and empirical research. Two of the most extensive and widely cited studies into adults' informal learning in a digital era from the adult education and lifelong learning literature reviewed for this study are Candy's (2004) study of the impact of digital technologies and the internet on self-directed learning and Selwyn et al.'s (2006) two-and-a-half

year empirical investigation of the impact of digital technologies on the learning of 1000 adults in England and Wales in the early 2000's. A more recent publication by Selwyn (2014) presents a third, critical perspective, highlighting what he refers to as "the gulf that persists between the rhetoric of how digital technologies *could* be used in education and the realities of how digital technologies are *actually* used" (p. vii) [emphasis in original]. In the following section, a comparison of the perspectives and findings of these three studies serves as a point of departure for illuminating key issues and questions about the impact of digital technologies on informal adult learning that are considered important for this study.

2.6.1.2.   *Investigating the impact of digital technologies on adult learning: Cautious optimism, ambivalence and distrust*

Recognising the significance of self-directed learning in the context of a digital revolution, Candy (2004) conducted an extensive study into the impact of digital technologies and the internet on self-directed learning[33]. Although characterising learning as self-directed, meaning that "whatever the stimulus to learning, the locus of initiative and control lies with the individual learner", Candy (2004) acknowledges that "much of this learning is unanticipated and unplanned", that it "occurs unbidden and continuously", and is therefore "generally referred to as informal or incidental" (p. 44). He describes the relationship between learning and ICTs in terms of reciprocity, where on the one hand, ubiquitous digital technologies create an incentive for learning and on the other, the technologies "provide a powerful adjunct to the self-directed inquiries of men and women of all ages and all stations in life" (p. 44). This stimulates a further demand for knowledge and information that, in turn, stimulates a need for further technology-related learning. Drawing on the work of phenomenographer Roger Saljo (1975), Candy (2004) concludes that digital technologies and digital learning environments possess qualities that can afford both deep and surface approaches to learning for self-directed learners. Overall, Candy's (2004) cautiously optimistic view about the potential benefits of digital technologies for supporting self-directed learning, tempered by concerns related to the concept of a digital divide between those with and those without access to digital technologies and the capabilities to make

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[33]   Candy (2004) uses the tem self-directed learning as a synonym for informal learning.

effective use of these technologies for learning, echoes many of the perspectives identified by Imel in her 2003 literature review.

By way of comparison, in their two-and-a-half year study of adult learning and technology with approximately 1000 adults in England and Wales, Selwyn et al. (2006) claim to have found "little special or new about adult learning in the digital age" (p. 174). They also found that access to and use of ICTs "made no difference to the statistical likelihood of someone being a lifelong learner or not" and that "new technologies were fitting alongside existing learning technologies and techniques rather than supplanting them" (Selwyn et al., 2006 p. xiii). It must be noted however that Selwyn et al.'s (2006) work is predicated on an understanding of the political ideal of the learning society thesis "where full participation in [formal] education is seen as taking place via ICTs and e-learning". This perspective of the role of digital technologies and the internet in supporting adult learning appears to be premised on a conception of adult learning that values adults' participation in formal education over informal learning. This is highlighted in the following statement:

> For these adults [who have access to computers and the internet] using computers for explicit educative or learning purposes is of secondary interest to more immediate tasks such as producing documents, communicating with family members or searching for information and general knowledge (Selwyn et al., 2006, p. 173).

On the other hand, Selwyn et al. (2006) did note "emerging signs of an informal learning society" (p. 182), confirming the observations of Tough (1978) and Livingstone (2007, 2010, 2012) that "informal learning represents the majority of learning that takes place across the workplace, community and home" (as cited in Selwyn et al., 2006, p. 182). They concluded that it can be expected that adults' use of digital technologies and the internet will be "assimilated into pre-existing patterns of informal learning rather than leading to any expansion of new formal engagement with education" (Selwyn et al., 2006, p. 183). Selwyn et al. (2006) suggest further that "these 'self-education' opportunities provide a 'freedom of education' and unrestrained 'non-system' of education which should be positioned at the heart of the learning society model" (p. 183). Finally, they assert that "giving informal learning a higher status is equivalent to widening participation at a stroke" (p. 201) and argue that

their data suggest that "one of the most effective ways in which practitioners can widen adult participation in education is by encouraging and supporting informal learning outside formal settings" which includes widening "engagement with ICTs" (p. 202). This is consistent with the view of Foley (2004), who, acknowledging the opportunities afforded by "these new technologies", suggested that adult educators need to be cognizant of the "potential contradictions" with the emerging environments for learning and leverage them "to achieve the broader purposes traditionally associated with adult education" (p. 197).

It is worth noting here that the apparently ambivalent findings of Selwyn et al.'s (2006) study of adults' learning in a digital age actually provide support for both Candy's (2004) cautiously optimistic view about the potential benefits of digital technologies for supporting self-directed learning and Merriam et al.'s (2007) aforementioned hypothesis about the emerging role of digital technologies in supporting the development of the learning society based on a focus on individual learners rather than on education institutions. However, it is also important to note that more recent surveys of adults in the United Kingdom commissioned by Futurelab (Hague & Logan, 2009) still find that almost a quarter of adults surveyed were "unable to cite any benefits of using technologies for learning" and "more than two in five adults reported that they experience barriers in using technologies for informal learning" (p. 44). These findings are corroborated by a NIACE (2008) survey of 4,932 adults in which almost 40% of respondents reported that they found using the internet either to be "of little or no help" or "didn't know" whether it was of any help in terms of how they prefer to "study for life outside work" (NIACE, 2008b, p. 13). Further, a 2011 review of the NIACE studies into adults' participation in lifelong learning conducted between 2002 and 2010 concluded that there was no evidence supporting the proposition that proliferation of digital technologies and the internet widened adults' participation in lifelong learning (White, 2011). However, these results possibly say just as much, if not more, about the difficulties of researching adults' attitudes towards and experience of informal learning—a problem almost universally acknowledged in the literature and discussed later in this chapter—as or than they say about adults' informal learning with digital technologies and the internet.

In his subsequent critique of the "dominant ideologies of contemporary society and technology", Selwyn (2014) maintains that "the academic study of educational

technology could be described as a blind field—a site of misunderstanding, misrepresentation and misinterpretation of what are profoundly political issues" (pp. 24, 160-161). One could conclude, for example, as does Kvasny (2009), that the "digital divide is a powerful discourse for socialization into a given social order (the information society)" (p. 36), or that the "myth" of a values-neutral "technological imperative" (Hoffman, 2006, p. 10) lures us into abrogating our responsibility to make ethical choices and decisions about how we use emerging digital technologies, and to what end. Selwyn (2004) also talks about an "antischool agenda" that is "based on a default assumption that education is best organised along informal lines of discovery, play and hard fun" (p. 161) and that seeks to subvert and devalue mass forms of formal education. Tracing these ideas back to Papert (1980, 2002), Downes (2010) and Siemens (2004), (as cited in Selwyn, 2014), Selwyn seems to be referring to the current emphasis on the affordances of digital technologies for supporting and enhancing informal learning as being "profoundly in step with contemporary dominant ideologies" (2014, p. 161) such as those reflected in the earlier utopian statement by Cross (2007).

Selwyn (2014) concludes by calling for an alternative to "educational technology" in the form of "critical participatory design", where "usually excluded 'end users' are involved in the development and production of technological artefacts and practices in ways that better reflect their interests, needs and values" (p. 163). This perspective resonates strongly with the thinking of Community Informatics scholar-practitioners such as Carroll and his colleagues (Carroll, 2009), who have been pursuing collaborative research in the area of human-centred information technologies and learning communities in the United States for almost two decades and who articulate a firm commitment to participatory design of community technologies from both moral and pragmatic positions (discussed further in sub-section 2.7.3). Overall, the above analysis suggests that exploring the possibilities of digital technologies and the internet for enhancing informal adult learning may require Adult Education researchers to see their research object through a different lens.

2.7. Conceptions of Informal Adult Learning in Three Practice Fields with Instantial Relevance to the GraniteNet Case Study

Having thus analysed definitions, theories, models and perspectives of informal adult learning from the reviewed literature and summarised insights considered to be important for the GraniteNet study, it now remains to examine conceptions and experiences of informal adult learning in studies from the three nominated practice fields with instantial relevance to the GraniteNet study: learning in geographic learning communities; learning in associational life and volunteer work; and learning in Community Informatics.

2.7.1. Informal adult learning in geographical or proximal learning communities

Geographical, or proximal, Learning Communities and the related concept of community learning are variously viewed from liberal humanist, communitarian, pragmatist and critical-emancipatory perspectives, with philosophical underpinnings "most commonly attributed to Dewey and his recognition of the importance of the social nature of all human learning" (Kilpatrick et al., 2003, p. 1). Eversole, Barraket and Luke (2013) adopt a Bordieuvian position, maintaining that to understand development processes, one needs to look "beyond the social to understand the full range of resources that particular communities in particular places may need, access, create and mobilize" (pp. 1-2). Gurstein (2001) agrees:

> Learning is taking place in most if not all community contexts and much of it is taking place informally within families, friendship groups, and voluntary associations… It should be understood that a fundamental element of "community learning" must be the rather more specific and targeted "learning" which is linked into ensuring the pre-conditions for economic survival both for individuals and for communities." (Gurstein, 2001, p.11).

According researchers from Australia and the United Kingdom, there are "clear signs that community learning is the way to a more sustainable future" for rural communities in particular (Kilpatrick et al., 2003, p. 7), with the so-called "wider benefits" of this increased learning activity often described in terms of enhanced

human, social and economic capital as well as improved health and wellbeing for individuals and communities alike (Schuller, Preston, Hammond, Bassett-Grundy & Bynnet, 2004). Theorising in the literature about how learning occurs in geographical and proximate Learning Communities such as the one that is central to this study is now explored.

2.7.1.1. *Theorising in the literature from the Learning Communities movement about how learning occurs in geographical learning communities*

The Learning Communities movement recognises the "abiding importance of place to people and to the management of their lives and circumstances" (Duke, Osborne, & Wilson, 2005, p. 5) and is said to be underpinned by a liberal humanist tradition of adult education "that valued the community as the vehicle of a common culture". As such, the Learning Communities movement is concerned with promoting universal access to education, training and employment and encouraging "citizen participation in community affairs" (Williamson, 2006, p. 99).

Whilst much of the literature on geographic learning communities is underpinned by the deceptively simple, communitarian premises that "strengthening our communities is a simple way to promote more effective learning and vice versa" (Field, 2005, p. 17), success is seen to depend on a complex set of arrangements and dynamics that serve to "operationalise" the learning community, enabling it to achieve its "core business" of knowledge-sharing through collaboration (Kilpatrick et al., 2003, p. 6). Learning Community interventions therefore typically involve social partnerships (Billett, Ovens, Clemans, & Seddon, 2007) among public, private and non-profit organisations and institutions facilitated by practitioners skilled in "partnership work" and "appropriate pedagogies" to foster development of "learning cultures" and "learning infrastructures" (Schreiber-Barsch, 2009, p. 43) through "informal, interactive, social situational learning-by-doing processes" that make use of "individual and collective reflection and systematisation" (Mantilla, 2010, p. 367; Wellbrock, Roep, & Wiskerke, 2012, p. 7; Crowther, 2006, as cited in Danaher et al., 2014). Through such "collaborative empowerment", the capacity of the community to "shape and manage its own future" (Kilpatrick et al., 2003, p. 2) is increased.

The special case of rural and regional learning communities and the impact of regionality and rurality on community learning from a capacity-building perspective[34] have been highlighted in the literature from Australia and the United Kingdom (see for example Danaher et al., 2014; Eversole et al., 2013; Falk, 2001). Here, emphasis is placed on the importance of social capital (Ballatti & Falk, 2001; Giorgas, 2007; Simpson, 2005), "community leadership capacity" (Kirk & Shutte, 2004, p. 234), "community network capacity" (Adams, 2005, p. 11) and broad stakeholder involvement (Sankey & Osborne, 2006) for achieving learning community objectives and sustaining initiatives over the longer term. The mechanisms that support the kind of collaborative, collective learning described in this literature are frequently analysed from a social capital theoretical perspective, where social capital theory is used to theorise the nature of the relationships between individuals and their (physical, virtual and organisational) communities and to account for both individual and community learning and development (Ballatti & Falk, 2001; Falk & Kilpatrick, 2000; Field, 2005; Giorgas, 2007; Kilpatrick, 2000; Kilpatrick, Barrett & Jones, 2003; Kilpatrick, Falk & Harrison,1998; Loechel & Kilpatrick, 2004). Also highlighted is the significance of a geographical community's "interactional infrastructure", defined as "the opportunities, structures and processes for interaction of community members" (Ballatti & Falk, 2001, pp. 4-5). This "interactional infrastructure" has been found to facilitate processes of "combination and exchange" among community members, affording learning that both draws on, and builds, social capital (Nahapiet & Ghoshal, 1998 as cited in Loechel & Kilpatrick 2004, p. 1).

Consideration of a community's interactional infrastructure leads in turn to the question of the impact of digital technologies and the internet on learning in geographical and proximal learning communities such as the one that is at the centre of this study.

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[34]   Community capacity-building is understood here as helping to establish conditions under which "the necessary personal and systemic attributes" required to identify and address community development challenges can develop and "be mobilised into action for the good of the community" (Adams, 2005, pp. 4, 5).

2.7.1.2.   *The impact of digital technologies and the Internet on learning in geographical and proximate Learning Communities*

Together, digital Information Communications Technologies (ICTs) and the Internet are seen as a critical component of the Learning Communities framework— to be leveraged in the interests of supporting lifelong learning opportunities for all community members and affording engagement and participation in social democracy and community life more broadly (Duke, Osborne & Wilson, 2005; Kearns, 2004, 2005; Longworth, 2006). Specific examples of Learning Community initiatives in the western democracies in the global North and South that have successfully leveraged ICTs in the service of community learning are widely reported in the literature (see for example, Dukeet al., 2005; Faris, 2005; Longworth, 2006; Sevigny & Prevost, 2006; NIACE, 2012).

The links between community development, social capital and digital technologies have been the focus of a substantial amount of research and policy deliberation in Australia in the last decade (see for example, Cavaye, 2004; DCITA, 2005; Giorgas, 2007; Simpson, 2005; Stehlik & Chenoweth, n.d.), however there is no consensus as to the nature of the impact of the internet and digital technologies on the wellbeing of local communities (Sevigny & Prevost, 2006) nor on rural communities in particular (NIACE, 2012; Rusten & Skerratt, 2008). For example, recent case study and longitudinal research with diverse communities in Europe and the US (reported in Haythornthwaite & Kendall, 2010) reveals evidence of positive outcomes of various forms of online interactions for place-based communities, including "how online and offline interaction form two parts of a whole support mechanism for community, whether the former occurs as a steady background complement to local life or whether it fills in when local life is disrupted" (p. 1090). Haythornthwaite and Kendall (2010) point to the outcomes of these studies that "have repeatedly found that close, personal ties can and are maintained online and through new technologies…and that synergies between online and offline strengthen rather than weaken relationships and community" (p. 1087). In contrast, Australian studies reported in the Community Informatics literature draw on a social capital theoretical analysis to highlight the potentially disruptive effects on rural communities of well-intentioned but overly

ambitious community technology capacity-building projects (Simpson, 2005; Simpson, Daws, Lennie & Kimber, 2004).

Sevigny and Prevost (2006) highlight what they see as an important distinction between a "Learning Community" as a "territorial entity" whose population is mobilised via a range of strategies including using ICT as an enabler "to foster a state of permanent alertness" in the interests of furthering a learning-based approach to community development, and a "Connected (or 'wired') Community" (p. 117), which they maintain is instrumental—rather than developmental—in nature, and emerges from practice. They propose a hybrid model, with strong similarities to GraniteNet as a hybrid Learning Community-Community Informatics project, that "goes beyond the instrumental character of internet applications [to] retain local dynamics at the core of the development process (Sevigny & Prevost, 2005, p. 128). These local dynamics are explored with reference to implications for understanding learning in GraniteNet in the discussion of learning in Community Informatics and illustrated in the case study report in Chapter 5.

2.7.2. Informal adult learning in associational life: *La vie associative*

Closely linked to the ideas underpinning the Learning Communities movement, the concept of learning in associational life—or *la vie associative*[35]—is based on the ideas of active citizenship and association, whereby individuals join together in locally-based groups, clubs and organisations—which are effectively social institutions—in the interests of what Illich (1975, as cited in Smith, 2000) called conviviality, and of pursuing a common interest or cause. Field (2005) talks about "the long association between civic engagement and adult learning" (pp. 12-13), citing research that demonstrates a strong correlation between high levels of education and high levels of civic engagement, and high levels of civic engagement and high levels of participation in adult learning. He proposes that this could be an indication of the existence of "an educated, middle class habitus" (p. 13) and a "positive" or "virtuous cycle" of social capital and adult learning (p. 82). Indeed, as noted by Ilsley (1989), "[t]he history of adult education has been a history of voluntary activity and voluntary

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[35]   *La vie associative* is a term from the French tradition of adult or popular education that refers to participation in community associational life as a form of self-education (Smith, 2002). It is translated for the purposes of this study as "learning in associational life".

association" (p. 100), where it has long been recognised that clubs and associations are collectivities whose members are engaged in the process of educating themselves (Follett, 1943, as cited in Smith, 2008).

Important insights about adults' informal learning in the context of their participation in associational life is also to be found in research into learning in community volunteer work and social movements.

2.7.2.1. *Learning in community volunteer work*

Research into adults' learning in the context of their participation in volunteer work—as an integral element of their participation in associational life—makes a significant contribution to theorising about adults' informal learning based on decades of empirical research. In this literature, the idea of democracy as articulated in "participatory democracy theory" linked to the thinking of Dewey (1916, 2008) is central, with participation in "small group democracy" seen to have a significant educative effect (Duguid, Mundel & Schugurensky, 2013, p. 117; Kavanaugh et al., 2007, 2009). In the literature on learning in volunteer work, researchers point to the symbiotic relationship between adults' learning and volunteering, where learning is seen as "part of the contract between the organisation and the volunteer" and conversely, volunteering seen as "a powerful source of learning" (Kerka 1998, p. 1). The relationship between volunteer work and informal learning has been the subject of much research in the United Kingdom and Canada in particular, with the types of learning that occur in volunteer settings reported to "cross the spectrum of adult learning" (Kerka, 1998, p. 1).

Pioneering research into the informal learning of volunteer workers conducted in Canada during the 1990's by Livingstone (2001) showed volunteer's work-related informal learning to be "much more extensive" than participation in formal and non-formal adult education and also revealed "a much stronger association between community-volunteer work time and community-related informal learning" (as cited in Schugurensky, Duguid, & Mundel, 2010, p. 82) than between paid employment time and workplace informal learning. Elsdon's widely cited (1995) study showed informal learning to be an important part of the volunteering experience, highlighting "unpremeditated" learning in the areas of "personal growth, confidence, interpersonal skills, empowerment, organisational learning, and ability and willingness to shoulder

responsibility" to be "the first and most important" learning mentioned by "an overwhelming majority" of volunteers (as cited in Schugurensky et al., 2010, p. 83). Pointing to the phenomenon of collective, organisational learning, Elsdon (1995) also developed categories for characterising volunteer learning—Social and Group; Content; Occupational; Political; and Personal —concluding that "high levels of individual learning and development, and of group learning and development, go together with an organisation's commitment to learning and social or caring objectives" (Elsdon 1995, p. 120).

These findings have been corroborated in more recent research from the United Kingdom's Community Learning Innovation Fund (CLIF) highlighting individual and community benefits of "volunteering in community learning", with increased confidence and self-esteem the most frequently cited outcomes, and personal agency— conceptualised as "the capacity to act independently and make personal choices" (Plant, 2014, p. 17)—the most frequently highlighted "outcome area" for learners (Plant, 2014, pp. 7-8). Also more recently, important insights have been emerging from the Canadian literature about the relationship between volunteer work and learning, focusing on the both the "what" of learning (or the content) as well as the "how" (or the process of learning). Conceptions of the mechanisms of volunteers' learning identified in the Canadian studies (Duguid, Mundel, Schugurensky & Haggerty, 2013; Schugurensky & Mundel, 2005) include a focus on tacit knowledge (Polanyi, 1966, as cited in Schugurensky & Mundel, 2005) and differentiating between learning that is planned and intentional and learning that is incidental (Schugurensky & Mundel, 2005). To illuminate the nature of volunteers' informal learning, these authors variously draw on:

1. Mezirow's (1991, 2000) theory of transformative learning to theorise about different kinds of learning (instrumental, communicative and transformative).

2. Situated learning theory—in particular the concept of Legitimate Peripheral Participation from Lave and Wenger's (1991) communities of

practice theory—and, to a lesser extent, on the concepts of self-directed learning (SDL) and experiential learning, to explain how learning occurs.

3. Social movement learning theory (Hall, 2006) to theorise the characteristics and qualities of volunteers' learning in social movements (Schugurensky & Mundel, 2005; Duguid et al., 2013).

2.7.2.2. *Learning in social movements*

Social movements are defined as "collectivities acting with some degree of organisation…for the purpose of challenging or extending extant authority…in the world order of which they are a part" (Rogers and Haggerty, 2013, p. 201). Social movements are described as being constituted by informal interaction networks and characterised by shared beliefs and solidarity, collective action focusing on conflict and use of protest (Della Porta & Diani, 1999; Snow, Soule & Kreisi, 2004 as cited in Rogers & Haggerty, 2013, p. 201). Learning in social movements—and in particular, for "radical social activism" (Jesson & Newman 2004, p. 253)—is about collective learning (Hustinx & Lammertyn, 2003); "it is about how the whole group learns collectively to achieve action through social change" (Rogers & Haggerty, 2013, p. 201).

In their research, Rogers and Haggerty (2013) found examples among their respondents of each of the three types of informal learning from Schugurensky' (2000) aforementioned tri-part model (that is, self-directed, incidental and socialisation), with a significant learning related to participation in social movements being learning that social change is possible (Rogers & Haggerty, 2013). Unlike learning in other contexts of community volunteering, informal learning in social movements can be characterised as experiential learning insofar as the full experiential learning cycle (Kolb, 1984)—that includes reflection on action that informs subsequent action—is apparent (Brookfield, 1986). McGivney (2006, p. 30) concurs, asserting that Australian research into social movement learning clearly demonstrates that such learning can lead to "a deeper and more critical understanding of society" (Foley, 1991, 1993, as cited in McGivney, 2006, p. 30). There is thus a consensus in thinking among scholars in this field, including Hall (2002, as cited in Rogers & Haggerty, 2013) that "social movements not only allow for learning, but that this learning occurs at levels that cannot be replicated in other situations" (p. 215). Research into the

dynamics of digital technologies and the Internet in the context of social movements is an emerging area of interest and is discussed in section 2.7.3 on Learning in Community Informatics.

2.7.2.3.   *The impact of digital technologies and the Internet on learning in volunteer work and social movements*

Research undertaken to date on the impact of digital technologies and the internet on volunteers' informal learning appears to be limited to identifying community volunteers' learning about and learning to use digital technologies in order to get the job done; that is, technology learning is primarily incidental, rather than being a "first-order goal" (Carroll & Farooq, 2009, p. 173). Studies by Carroll and Farooq (2009) and Merkel et al. (2005, 2007) in the United States. and by Stillman (2010) and Stillman and Stoecker (2004) in Australia have found that community groups and organisations relying on volunteers face particular challenges when it comes to making effective use of digital ICTs in their work. These challenges are said to be related to a combination of a lack of financial and technological resources and limited access to technology expertise and training opportunities, which translate into "a lack of control over IT" (Carroll & Farooq, 2009, p. 178). Also implicated are a highly feminised and transient workforce and a strong focus on face-to-face, person-centred interactions (Stillman, 2010) and also on "working on the social mission" (Carroll & Farooq, 2009, p. 183) of the group at the expense of adequate attention to investing time and energy into technology infrastructure and systems. Carroll and Farooq (2009) comment that many community groups are, as a result, "paralysed in a sense with respect to information technology" (p. 175).

Kavanaugh et al. (2009), however, report a growing evidence base that ICTs "increase communication, interaction and participation among members of voluntary associations, and thereby…lighten the burdens of leadership, communication and information exchange within these crucial voluntary associations" (p. 71). Emphasising the need for community groups to understand that "technology is part of who they are and what they do" (Merkel et al, 2005 p. 158), these researchers have identified the need for, and importance of, organisational learning for technology sustainability via processes of collaborative inquiry and participatory design (Merkel et al., 2005; 2007), communities and networks of practice (Fischer, Rohde & Wulf, 2009) and developmental learning communities (Carroll & Farooq, 2009; Rosson &

Carroll, 2009). These themes are elaborated in the section on Learning in Community Informatics.

2.7.2.4. *Differential experiences of learning in community volunteering*

Just as there is no such thing as the generic adult learner, community volunteers' experiences of volunteering—and of learning through volunteering—are diverse. With reference to questions of rurality, for example, statistics show that people in rural and regional communities are more likely to volunteer on a regular basis than their metropolitan and city counterparts (ABS, 2008, as cited in Kilpatrick, Stirling & Orphin, 2010, p. 195), with "many of the community organisations that sustain cultural life in regional Australia run either entirely or mostly by volunteers" (Leader-Elliott, Smiles & Vanzo, 2005, p. 1). Studies of volunteering in rural communities in Australia, the United States and Canada point to differences between volunteering in metropolitan and rural areas related to contextual factors such as: rural demographics including lower levels of formal education qualifications; lower numbers of professional service delivery workers; "overlapping" (Kilpatrick et al., 2006, p. 197) community networks; less volunteer supervision; and a resistance among volunteers to participating in formal education and training. Most important for the GraniteNet study, however, is the question of ageing and its impact on learning and civic engagement, particularly considering that the ageing of the population is one of the major social and demographic changes being experienced in Western democracies around the world (Grosjean, Pither, Kube & MacLaey, 2009; Merriam et al., 2007), including, and especially, in the community of Stanthorpe[36].

From a stage of life perspective, the time of life of people over the age of fifty-five to sixty years has been conceptualised as "the third age" (Laslett, 1991): "a time when individuals begin to relinquish the responsibilities" of child-rearing and employment and "seek other forms of self-fulfilment and autonomy" (Grosjean et al., 2009, p. 215). For many, this can mean the freedom to participate more actively in interest and leisure-based activities and in the associational life of their local communities, which often involves learning new or improving existing knowledge and skills. Characterised as "third age learners" (Hazzlewood, 2003, p. 1), many older

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[36] The question of Stanthorpe's ageing population is discussed in the case study report in Chapter 5.

members of the community will take the opportunity to avail themselves of a range of structured informal and non-formal learning activities related to hobbies and interests as well as maintaining health and wellbeing. Findsen (2006) however, criticises what he refers to as a "middle class perspective" of the older adult, emphasising that this vision of the autonomous, engaged older adult learner ignores the impact of a tendency in Western societies to marginalise elders and "assumes that older adults will have the financial resources and social support to uphold this dream" (p. 67). Grosjean et al. (2009) state that "the differential opportunities available to older adults depend on variable such as social class, gender, race-ethnicity and geographical location…and are shaped by ambivalence about whether seniors are a 'burden' or an 'asset' to society" (pp. 215-6). There are also the concerns older adults themselves have in relation to the impact of their perceived diminishing cognitive functioning on their capacity for learning (Merriam et al., 2007).

Importantly for this study's focus, much of the research into older people's learning in the context of community and associational life is focused on learning about and learning to use digital communications technologies for a variety of social and information needs. The rationale for this focus can be explained in the following terms:

> The internet…is becoming an increasingly important tool for social inclusion, allowing older people to remain in contact with family and friends, pursue interests and build communities of interest. The internet provides a means by which some of the physical, psychological and social barriers to social participation that can accompany ageing may be overcome (Chesters, Ryan & Sinning, as cited in Adult Learning Australia, 2013b, p. 13).

Digital technologies have also been linked to improvements in the wellbeing of older people living in rural and regional areas in Australia and in the UK (Easton, 2014; Warburton, Cowan & Bathgate, 2012) and New Zealand (Hazzlewood, 2003). Considering the complexities of the digital divide (Selwyn, 2004; Stanley, 2010; Warschauer, 2002) and the related implications for people's social and economic well-being, however, it is apparent that such initiatives on their own are unlikely to be adequate solutions to the complex social problems affecting the lives of older and other

marginalised people in contemporary Western society in the digital era. These questions are explored further in the following section on learning in Community Informatics.

2.7.3. Informal adult learning in Community Informatics

A response to the emergence of the information and network societies, Community Informatics (CI) has been defined as "the application of Information and Communications Technologies (ICTs) to enable community processes and the achievement of community objectives" (Gurstein, 2003, p. 77). "At the heart of CI", says Goodwin (2008), "lie two key premises: a focus on the 'local community' as an appropriate site for the social shaping of ICTs, and a broader recognition of prevailing power relations in the network society that informs and structures this approach" (p. 420). Community Informatics as a field of scholarship and practice[37] is concerned with the interaction between communities and technology and typically involves research and development activities related to Community Technology Centres (CTCs), Community (or Civic) Networks, community portals, and technology capacity-building initiatives in community-based organisations in both developed and developing countries (Foster, 2011; Loader & Keeble, 2004; Stillman, 2010; Williams, Ahmed, Lenstra & Liu, 2012)[38]. Stillman and Denison (2014) characterise Community Informatics as follows:

> CI aims to develop nuanced socio-technical responses to complex social problems and situations, and this is to be expected as it deals with 'real world' issues. This contrasts with approaches often associated with more conventional ICT solutions which build a solution for a too-simple model of social reality (Stillman & Denison, 2014, p. 24).

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[37] In his authoritative history of Community Informatics, Day (2010) notes that "The appropriation and utilisation of a broad range of information and communication technologies by community development workers, community groups, clubs, associations, etc., in the community interests—e.g. community networks, community information networks, community telecottages/telecentres and community media—existed long before community informatics emerged as an academic construct" (p. 259).

[38] Community Informatics initiatives in developing countries are usually labelled as "Development Informatics" or ICT4D (Heeks, 2007) and fall outside the scope of this review.

A study such as this focused on investigating informal adult learning in GraniteNet as a Learning Community and Community Informatics project necessarily combines the "learning-based approach to community development" (Faris, 2005, p 31) orientation from Learning Communities models with the concept of learning in associational life (*la vie associative*) with a community-based orientation to ICTs. In the Community Informatics literature, however, learning is not always explicitly theorised and is often assumed to occur via interactions between people (or "actors") (Fox, 2009 p. 34), their technologies and social networks (Williams & Durrance, 2008).

One of the few volumes focused specifically on theorising the nature of learning in Community Informatics in the West comes from a multidisciplinary team of scholars in the US that broadly locates its work in the tradition of Deweyan pragmatism, where "community inquiry and informatics combine in the 'pragmatic technology' approach to community-based ICT creation and use…that sees ICTs as developed within a community of inquiry and embodying both means of action and forms of understanding" (Bishop, Bruce & Jones, 2009, p. 4). Theorising about adults' informal learning in the context of Community Informatics is now discussed with reference to perspectives from Deweyan pragmatism (Bishop et al., 2009), communities and networks of interest and practice (so-called CoIs, CoPs and NoPs) (Fischer et al., 2009), and the concept of "effective use" of digital technologies for individual and community empowerment (Gurstein, 2001; Stillman & Denison, 2014).

2.7.3.1. *Theorising informal learning in Community Informatics from the perspective of Deweyan pragmatism.*

Echoing much of the theorising in the literature on geographic Learning Communities, the literature on learning in Community Informatics drawing primarily on Deweyan pragmatism highlights the importance of informal learning, learning in communities, learning through Participatory Action Research and of social capital and "community infrastructures that facilitate learning" (Carroll, 2009, p. ix). In this theorising, knowing is situated, often distributed and "always mediated by artifacts", with knowledge linked to human agency in terms of "people's ability to act, *participate*, and make appropriate and informed decisions in *sociotechnical environments* [emphasis in original]" (Fischer et al., 2009 p. 77). This, in turn, is seen to contribute to building *sociotechnical capital"* [emphasis in original] (Resnick, 2002,

as cited in Fischer et al., 2009, p. 114), a term used to refer to "productive combinations of social relations and information communications technologies (Resnick, 2002, p. 649).

Importantly, these researchers "make the distinction between 'learning in communities', in which learning is often informal, incidental and integrated with participation in community activity" and 'learning communities', which exist for and are all about learning" (Carroll, 2009, p. viii). These authors argue that "Learning in communities is not just reciprocal or mutual learning: it is the collaborative construction of ideas in practice"…where "ICTs are an end result of, as well as a means to accomplish, community learning" (Bishop et al., 2009, pp. xi, 4). However, the possibilities for community learning are seen by some to go beyond this to incorporate opportunities for "expansive learning" where "the learning actions inherent in scientific and artistic activity are those of learning to imagine, learning to 'go beyond the given', not in the privacy of the individual mind but in public, material objectifications" (Engestrom, 1987, p. 97). Bruner (2012) refers to these processes of "generating and testing possibilities" as "cultivating the possible", which he claims is what constitutes informal learning (p. 29).

2.7.3.2. *Learning in Community Informatics as learning in communities and networks of interest and practice*

Learning in Community Informatics, which involves people coming together in the interests of pursuing a common interest or cause— in this case, the cause of digital inclusion and empowerment (Fortunati, 2009)——may well be understood and accounted for using the Community of Practice model (Lave & Wenger, 1991; Wenger, 1998). This is particularly the case in circumstances where there is a shared repertoire of practice related to a shared domain of interest and also where the concepts of legitimate peripheral participation and identity-construction (Wenger, 1998, 2007) make sense in terms of both what is learned and how learning occurs in a particular setting.

Wenger et al. (2010) maintain that "all communities of practice are orientated to their members' learning experiences" (p. 96) and have applied the theory of communities of practice to "technology-enabled communities of practice" in which they analyse "how technology presents new learning opportunities for communities",

including those "where the learning component is less salient" (pp. 11-12). They argue that different community configurations imply different orientations to learning together, but emphasise that "meaningful learning in a community requires both participation and reification" (Wenger et al., 2010, p. 57). Importantly for the GraniteNet study, Wenger et al. (2010) note that "in some cases, serving a specific context becomes central to the community's identity and the way it operates" (p. 96). As described in the case study report in Chapter 5, in the case of GraniteNet, serving the specific context of the local or proximal community was the driving force for development of the socio-technical infrastructure of the GraniteNet community portal.

Fischer et al. (2009) differentiate Communities of Practice (CoPs), which they characterise as being homogenous in terms of a shared practice, normative framework and "single knowledge system" and where members "have a responsibility (at least implicitly) for the reproduction of their community and their practice" (p. 79) from Communities of Interest (CoIs), which they see as heterogeneous with "multiple knowledge systems" and "defined by their collective concern with the resolution of a particular problem" in relation to which they are "informed participants", but "neither experts nor novices", but can be both (pp. 79-80). These are further differentiated from Networks of Practice, (NoPs) which are seen as looser, more distributed networks where "members share a common practice but do not work together in an interdependent way to co-ordinate their work" (Fischer et al., 2009, p. 79). Their analysis illustrates that whilst a communities of practice lens is often helpful for analysing informal community learning, it is not universally applicable to all community learning situations – a point acknowledged by Wenger himself (2009) and also noted by Thorpe (2009).

2.7.3.3.   *The concept of "effective use" as a practical theory of learning about and learning to use digital technologies for individual and community development and empowerment*

An example of theorising in Community Informatics that touches on—but doesn't fully develop—the learning aspect is the concept of "effective use" originally coined by Gurstein (2003) to refer to "the capacity and opportunity to successfully integrate ICT into the accomplishment of self or collaboratively identified goals" (p. 43). Stillman and Denison (2014) describe Gurstein's (2003) concept of effective use as "a practical theory for achieving community empowerment" that is "intended to

distinguish between the opportunities offered by ICTs and the[ir] actual realization in practice" (p. 8), incorporating:

- ensuring access to ICTs through provision of required and appropriate technologies along with the "social facilitation" at community and government levels to enable access and utilisation.
- 'empowerment' in terms of the capabilities both to participate in the design and make "effective use" of the technologies for individual and community benefit, and including "resistance" to a dominant discourse of "networked individualism" that serves to undermine and appropriate digital technologies and the internet for more utilitarian ends of a "market-based system" and network society (Stillman & Denison, 2014, pp. 8, 9).

By way of example with particular relevance to the GraniteNet project, in the Adult Community Education (or ACE) sector, initiatives targeted at promoting digital inclusion to address the digital divide have been referred to as "digital literacy" and "digital" or "e-inclusion" initiatives and can be broadly grouped into three stages, each with its particular priority, as illustrated in Table 2-4 (European Commission, 2008, p. 12). As illustrated in the table, initiatives in stages one and two target awareness-raising about the benefits of digital technologies and the Internet and promote access to these technologies, thereby aiming to address the primary digital divide (European Commission, 2008). Stage 3 initiatives target development of more sophisticated digital skills and active participation in the information society, referred to by the authors as an "emerging secondary digital divide" (European Commission, 2008, p. 15).

Table   2-4
Three Stages of Digital Literacy Initiatives (European Commission, 2008)

Stage and priority	Focus of initiatives specifically targeting adults
Stage 1: Improve access and raise awareness (*primary digital divide*)	Improve access and connectivity by expanding public internet access points, promoting universal household connectivity and raising awareness
Stage 2: Digital literacy as promoting basic ICT user skills (*primary digital divide*)	Provision of basic computer skills/digital literacy training in adult education and community technology centres
Stage 3: Improving quality of use and participation in the Information Society (*secondary digital divide*)	Encouraging the development of more sophisticated and sustainable digital skills, including promoting critical thinking, trust, confidence and multiplatform use

With specific reference to the "emerging secondary digital divide" related to Stage 3 digital inclusion initiatives (European Commission, 2008, p. 15), the European Commission (2008) reports research showing disparities in relation to both the quality and intensity of use of digital information and communications technologies between those with higher levels of education and the less well educated (2008), pointing to the aforementioned learning divide described by Sargant (2000) and White (2011). An even "broader concept of digital inclusion" is advocated by Alamelu (2013), whereby "citizens empower citizens to go beyond being 'users and choosers' of technology to become 'makers and shapers of the technologies available to them and the rest of society" and where "in a truly inclusive digital society, citizens need to be actively engaged in the creation of sociotechnical systems" (p. 229). This perspective is reminiscent of the aforementioned proposition put forward by Selwyn (2014) and articulates a mandate that is the purview of the Community Informatics movement.

Stillman and Denison (2014) have recently sought to extend the concept of "effective use" of digital technologies as articulated by Gurstein (2003) through the lens of Sen's (2001, as cited in Stillman & Denison, 2014) capability approach to human development. Contrasting with theorising about the forms of capital by Bourdieu (1986), which subordinates social and cultural capitals to an economic capital bottom line, and also with sociotechnical systems approaches that tend to focus on technical problem-solving (Stillman & Denison, 2014, p. 28), "the fundamental insight of the capability approach…is that [human development] should not be economic growth as an end-in-itself, but rather be the expansion of people's real freedoms to do and be what they value" (Alkire, 2005, p. 125). As such, the concept

of effective use of digital technologies as a critical-humanist construct with strong links to theorising about Community Information Literacy (Partridge et al., 2008) and informed learning (Bruce et al., 2012) presents a tantalising opportunity for theorising about the nature of learning in the GraniteNet project (Arden, 2014).

2.7.4. Summary of insights about informal adult learning in the three practice fields: Learning in associational life as the common learning denominator

The above review of adults' informal learning in these three practice fields highlights the eclectic nature of theorising about adults' informal learning in the context of their participation in community life, and specifically, in community technology or sociotechnical environments. What distinguishes theorising about adults' informal learning in each practice field is linked to the specific nature and dynamics of each field in the context of civil society. For example, Community Informatics and the Learning Communities movement are community development, or capacity-building, interventions, whereas participation in associational life (*la vie associative*) can be described as an inherently organic and emergent characteristic of participatory democracy and civil society. Therefore, in the geographic Learning Communities movement, learning is framed in a Lifelong Learning tradition, supported by targeted, collaborative and strategic efforts to foster engagement of citizens in lifelong and life-wide learning. The tendency is to focus on individuals' learning linked to participation in civil society with an emphasis on fostering links between informal learning and formal education. As such, the Learning Community is constituted as a result of increased participation of all citizens in—and concomitant valuing of—lifelong and life-wide learning, with digital technologies seen as a vehicle for this learning.

In Community Informatics, however, digital Information Communications Technologies are a motivation for, a means to, and an end result of individual and community learning, with an emphasis on collaborative and collective learning in the interests of achieving community development goals. In associational life, learning is both a prerequisite for and a by-product of people's collective engagement in shared activities around shared interests or in pursuit of a common cause. Learning in associational life is therefore implicated in both learning in geographic Learning Communities and learning in Community Informatics and, as such, is the common

learning denominator across all three fields. An important implication of this for the GraniteNet study is that an understanding of learning in associational life is prerequisite to and essential for understanding learning in geographic learning communities and learning in Community Informatics.

2.8. Investigating Learning in GraniteNet: Emerging Issues and Knowledge Gaps

In this final section, implications of the literature review for the GraniteNet study are discussed with reference to dominant themes, emerging issues and knowledge gaps. Challenges and opportunities for investigation adults' informal learning in GraniteNet are the focus of discussion and the significance of the study's contribution to knowledge is outlined.

2.8.1. Researching informal adult learning in community settings: Challenges, pitfalls and opportunities

A common theme in the literature on informal adult learning emerging from the above review relates to the difficulty of investigating a ubiquitous, multifaceted and nebulous phenomenon, described many years ago by Tough (1971, 1978 as cited in Livingstone 2010, p. 3) as "the submerged part of the iceberg" of adult learning. The literature on researching informal learning is replete with terms such as "uncovering" (Boud, 2006, p. 77; Schugurensky et al., 2010, p. 80); "making the invisible visible" (European Union, as cited in Boud, 2006, p. 125); "recovering" (Hager & Halliday, 2006, p. 1); hidden, embedded and need to be "captured" (McGivney 2006, p. 32); "below the radar" (Colley et al., 2003, p. 114) and "mysterious, little understood and invisible" (Hager & Halliday, 2006 p. 8). Moreover, there is consensus in the literature that there is still much to be learned about the nature of adults' informal learning in volunteer work and associational life and that particular conceptual and methodological challenges confront those who study the informal learning of community volunteers. These challenges are related to a need to better understand "the scope, significance, expressions and internal features of informal learning" as well as to "develop creative research strategies to overcome the difficulties in eliciting informal learning" (Duguid et al., p. 234). McGivney (2006) unpacks these ideas further and attributes the challenge of researching informal learning to the following factors:

- The scale and diversity of informal learning, that precludes a full examination of its full extent (related to Tough's iceberg analogy).

- That much informal adult learning is embedded in activity directed towards a purpose other than learning, so that learning is not the object of the activity and therefore not recognised, nor described as learning.

- That adult learners typically have a conception of learning as being related to formal education (where learning is seen as structured *acquisition* of codified knowledge and skills), so that they do not view informal learning (related to *participation* in everyday activities) as real learning (McGivney, 2006, pp. 29-33, 37).

McGivney (2006) concludes that "the main challenge for research is to capture a process that is not always conscious or recognised and identify the ways in which people acquire and utilise the knowledge and skills they gain informally and often unintentionally" (p. 33). Implications of these perspectives for the design of the GraniteNet study are significant, as highlighted in Chapter 3.

2.8.2. Summary of dominant themes, emerging issues and knowledge gaps

The review of the literature on adults' informal learning in a digital age with specific reference to learning in geographic Learning Communities, learning in associational life and volunteer work, and learning in Community Informatics, reveals a diversity of perspectives from an eclectic, multidisciplinary body of work. Answers to questions about the nature of adults' informal, everyday learning in a range of contexts and settings and about the impact of emerging digital technologies on this learning are still being sought. Knowledge gaps identified in the literature are related to three main questions that link back to the practice problems originally identified as the impetus for the GraniteNet study, from whence the research questions were devised:

1. How do we account for the significant and valuable[39] informal, everyday learning in which people engage in the context of participating in local community life?

2. How do digital technologies interface with and impact on adults' informal learning in community settings?

3. How is research into informal learning in everyday life best conducted?

It is proposed that this study will make a contribution to knowledge in the field of informal adult learning by proposing answers to these questions based on an empirical investigation into the learning experiences of participants in the GraniteNet project.

2.9.   Conclusion

Based on a situated field of study approach involving four layers of analysis that gradually scope the literature review, literature from foundation disciplines and their associated fields of scholarship and practice in the fields of Adult Education and Lifelong Learning has been reviewed and contributions to theorising about the nature of adults' informal, everyday learning discussed. A tri-part categorisation of learning theories highlighting the main contributions of theorising in each category was presented with reference to what is central to theorising learning in each case, what insights are offered in terms of critical links between learning and other related factors and phenomena, and also to perspectives on the impact of digital technologies and the internet on people's everyday learning.

The critical importance of theorising in the areas of adult literacy and community information literacy was highlighted, with a focus on emerging perspectives of digital and community information literacies as foundations for lifelong and life-wide learning. Theories and models of informal learning drawn from this literature were analysed and compared to identify similarities, differences and emerging perspectives needing to influence the GraniteNet study. Particular attention was paid to exploring diverse and contrasting perspectives on the question of the impacts of emerging digital

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[39]   For the purposes of this study, significant and valuable learning is not only learning that is considered significant by scholars because it involves "changes in the self", such as "expansive, transitory and transformative learning" for example (Illeris, 2007, p. 45), but also learning that "furnish[es]…direct increments to the enriching of lives" (Dewey, 1916, Ch 18 Educational Values 2, The valuation of studies, para 2) and/or serves an instrumental purpose for the learner in terms of being a means to a desired or valued end (Dewey, 1916).

communications technologies on adults' everyday learning based on comparisons of selected empirical and conceptual studies.

This was followed by a review of conceptions of informal adult learning drawn from the literature emanating from the three practice fields of particular relevance to the GraniteNet study: Learning in geographic Learning Communities, learning in associational life and volunteer work, and learning in Community Informatics, affording a situated analysis of theorising informed by contemporary and emerging practice-theory and acknowledging the principle of instantial relevance of formal theory to adult education practice settings. An important insight emerging from this section of the review is that an understanding of learning in associational life is prerequisite to and essential for understanding learning in geographic learning communities and learning in Community Informatics.

Following a synthesis of dominant themes, emerging issues and identified knowledge gaps emerging from the review, considerations relevant to challenges for researchers investigating adults' informal, everyday learning were discussed with reference to implications for the design of the GraniteNet study.

Chapter 3.
<u>Research Design, Conceptual Framework</u>
<u>and Methodology</u>

"By learning about how the world appears to others, we will learn what the world is like, and what the world could be like" (Marton & Booth, 1997, p. 13).

3.1.   Introduction

This chapter outlines the research orientation, design and methodology, beginning with an exposition of the theoretical and conceptual frameworks guiding the study in the tradition of qualitative, case study research within an over-arching paradigm of interpretive social science. Points of departure for the research design are then outlined with reference to the practice problems presented in Chapter 1, and also to theoretical, philosophical and epistemological perspectives relevant to the specific focus of the research as an inquiry into human learning in the context of the GraniteNet project. A reflexive analysis of the implications for the research design of this researcher's own philosophical and epistemological assumptions about learning concludes the first section.

The research design is then presented and justified, beginning with articulation of the research questions linked to their related practice problems and mapped to different learning aspects viewed through the lens of phenomenography. A holistic conceptual framework guiding investigation of the research questions is then presented along with a detailed explanation of the study's conceptual and analytical frameworks guiding data collection, analysis and interpretation. The rationale for the decision to conceptualise the research as a single site case study and for the choice of phenomenography as the approach adopted to formulating, investigating and illuminating the research questions is explained. Key features, principles, practices and considerations in case study research and phenomenography as they are applied in the study are presented, highlighting the importance of researcher reflexivity and interpretive awareness. Strategies adopted to ensure a full and open account of the research process are explained in the interests of maximising the trustworthiness of the results and ensuring the credibility of the study. These include considerations related to sampling, data collection, data analysis and interpretation. Particular challenges and

dilemmas presented by phenomenography and strategies for addressing these in the study are briefly discussed. The chapter concludes with confirmation of the defensibility of the research design.

3.2.   An Interpretive, Reflexive Orientation to Investigating Learning in Context

The problem at hand requires an investigation into the nature of human "learning-in-context" (Biesta, 2009, p. 61). As such, the purpose of the research is to "discover how people construct meaning in natural settings"—in this study, how people learn in the context of their involvement in GraniteNet— and, in turn, "to arrive at understandings and interpretations of how people create and maintain their social worlds" (Neuman, 1997, p. 68)—in this study, through engagement in informal learning. The study is therefore located in a tradition of interpretive social science that privileges qualitative and naturalistic approaches over quantitative and experimental research methods (Quinn Patton, 1990). Secondly, as the study involves the collection of qualitative data representing "concrete aspects of the world" from and about individuals in a particular social context—that is, people's conceptions and experiences of learning in the context of their involvement in GraniteNet—it is considered to be empirical in nature (Neuman, 1997, p. 328; Somekh & Lewin, 2005; Marton & Booth, 1997). Thirdly, as it is the meanings, perspectives, understandings and experiences of this particular group of individuals in this particular setting that are the focus of the study, the research constitutes a single site, instrumental case study in which the phenomena of interest can be investigated in depth in their context with a view to illuminating what needs to be known and understood about them and their possible relationships that will contribute to knowledge in the case study site and, in turn, enhance our understanding of people's experiences of these phenomena in comparable settings (Stake, 1995; 2005).

Whilst paradigmatic categorisations are important and helpful for the novice researcher, providing a starting point for locating a study in the broader research community, the researcher concurs with Somekh and Lewin (2005, p. xiv) that it is her own epistemological, axiological and ontological understandings and philosophical perspectives that "provide the over-arching framework within which appropriate theoretical frameworks and research methods are selected as the first step in research

design". With reference to hermeneutic understanding in the interpretive paradigm, Usher Bryant (1989) propose that "all our knowledge is historically located and situated" and that "all understanding is interpretation" (p. 37), with the researcher's task being to uncover and distinguish between prejudices that are "blind" and those that are "productive of knowledge" (p. 31). It follows that this researcher's identification and acknowledgment of her assumptions, biases and prejudices is both a task that needs to be undertaken at the outset to inform and justify research design *and* a thread that needs to be woven into all phases of the study to ensure its credibility. This researcher therefore declares her personal and professional orientations to the study to be aligned with the following positions:

1. That "social science research is an art as well as a science" (Somekh & Lewin, 2005, p. 2), requiring an experiential engagement using head, heart, hands and spirit (Arden, 2005) in the creative application of the scientific method;

2. That "researchers choose a methodology and methods which are appropriate to both the area of enquiry and their own way of seeing the world" (Somekh & Lewin, 2005, p. 2).

3. That social research is a learning process that never ends, requiring the researcher to adopt a "learning attitude" (Rogoff, 2003, p. 24; Marton & Booth, 1997; Stake, 1995; 2005).

4. That "reflexivity, not recipes, is the hallmark of the good social science researcher" (Somekh & Lewin, 2005, p. 4; Neuman, 1997; Rogoff, 2003).

With reference to point four, which is arguably a prerequisite for the first three, Sin (2010) provides the following definition of reflexivity which is adopted in this study.

Reflexivity is when a researcher identifies his or her own preconceptions that are being brought into the research at the outset and then systematically questions at each stage of the research process as to how to minimize the effects and whether the effects have been sufficiently dealt with (Sin, 2010, p. 310).

3.3.   Points of Departure for the Research Design

A guiding framework for a reflexive research design is provided by Hodkinson and McLeod (2007), who suggest three points of departure for researchers when they study learning: first is the researcher's own understanding of the phenomenon informed by her own epistemological, axiological and ontological assumptions and prejudices, as outlined above; the second, the context in which the learning is to be investigated and its learner population; and the third, the chosen methodology. Centred on the research questions, which are articulated in Section 3.4, all three are interrelated and provide a way forward into the research design via the researcher's employment of reflexivity, as illustrated in Figure 3-1.
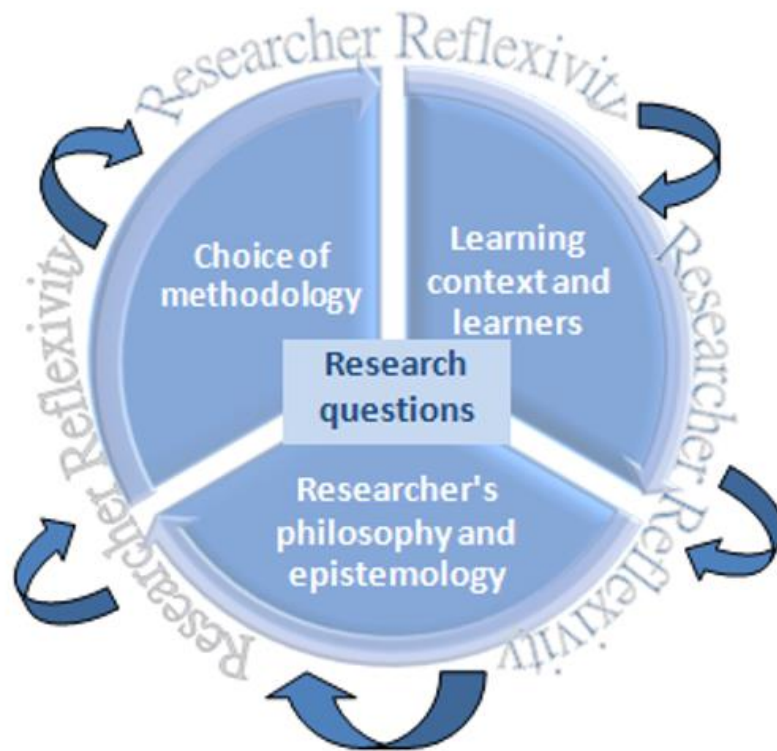
Figure 3-1   Investigating learning: Points of departure for the research design

As a prelude to articulation of the research questions and presentation of the research design and conceptual framework, the implications of each of the above points of departure for the research design are first briefly addressed as a result of a reflexive engagement with the following questions:

1. What are the researcher's epistemological and philosophical assumptions and prejudices about learning, and how learning should be conceptualised and researched, and how do they influence the research design?

2. What are the characteristics and attributes of the learning context and the learners, and how do they influence decisions about how learning is conceptualised and in turn, investigated?

3. And related to this, how does the decision to focus on the context as a case study and the choice of phenomenography as a research approach influence how learning is conceptualised in the study?

Such a disclosure enables the researcher to surface, examine and critically reflect on her assumptions and prejudices—both "blind" and "productive of knowledge" (Usher & Bryant, 1989, p. 31)—in relation to the phenomenon under investigation, whilst also helping her "to be alert to the ways in which the theoretical and methodological approaches taken to investigate [the] research object…contribute to the constitution of the objects of [the] research" (Miller, 2009, p. 163). Importantly, it also contributes to the "full and open account" required for the reader to be able to make judgments about the credibility and trustworthiness of the research and its knowledge claims (Booth, 1992, p. 55).

3.3.1. Researcher's philosophy and epistemology: The researcher I am is the person I am[40]

To address the first of the questions presented above, a reflexive analysis of artefacts from her own scholarship produced between 2006 and 2011 was undertaken by this researcher that   reveal a number of underpinning assumptions and preconceptions about the nature of learning and about how research into learning is best conducted. Presented at Appendix E, the analysis reveals the researcher's strong preference for epistemological pluralism and conceptual middle ground that seeks to

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[40]   This was posed as the focus topic for an assignment in research methods course undertaken by the researcher during 2005 (University of Southern Queensland, 2005) and has strongly influenced her orientation to this study.

reconcile apparently incompatible, or incommensurable (Sfard, 1998), perspectives on the nature of learning. These include that significant and valuable[41] learning:

- can be both intentional and incidental, and both existential and activity-based.

- is often embedded in social activity but is at times a solitary endeavour.

- is at times instrumental, focused on the achievement of learner-identified goals, and at times involves reflection and personal transformation.

- is always cognitive, involving both acquisition and construction of knowledge and yet also "embodied" (Hodkinson, Biesta, & James, 2008, p. 38), involving development of skills and attributes through participation in social practices that engage cognitive, affective/emotional, physical and even spiritual dimensions.

As outlined in the material at Appendix E, these pluralist and seemingly contrasting perspectives of the nature of learning carry over into the researcher's orientation as to how one best gains knowledge—or learns— about learning; that is, how should research into learning be conducted? Influenced by concepts borrowed from Cultural Anthropology and Ethnography (Fetterman, 1989; Morey & Luthans, 1984; Pike, 1957; Rogoff, 2003), the analysis of researcher artefacts at Appendix E reveals a valuing of the subjective, "emic" perspective of insider knowledge (Pike, 1957; Rogoff, 2003) and the primacy of the learner's own experience along with a preference for multiple "decentred knowledges" (Agger, 1991, p. 121) over the knowledge of outside experts. On the other hand, the desire for an "etic", or outsider, perspective (Pike, 1957; Rogoff, 2003) that allows for objectivity and impartiality is also reflected, along with an inherent valuing of expert knowledge that can, through a combination of inductive and deductive logic[42], be brought to bear in the investigation and illumination of complex social phenomena such as learning. There is also a valuing of the empirical over the purely abstract and theoretical, whilst at the same time a rejection of purist empiricism's claim that all knowledge about the social world needs

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[41]   Refer to Chapter 2 for an explanation of this researcher's conception of significant and valuable learning for the purposes of this study.
[42]   As discussed in subsequent sections of this chapter and in the report of research methods in Chapter 4, this researcher was later to discover through her engagement with phenomenography, the concept of abductive logic (Limberg, 2008, p. 615).

to be observed and experienced via the five senses, primarily through observation of behaviour (Garrat & Li, 2005; Neuman, 1997). Herein is reflected what Rollins (1995) referred to as a "first order non-realist" world view, which sees "our knowledge about reality" as always "partial, fallible and revisable" and therefore the goal of research being "to expand one's repertory of conceptual frameworks, since the more points of view one can appreciate, the richer one's experience will be" (p. 55).This, in turn, requires the researcher to adopt a "dialectic stance", where diverse philosophical assumptions and methods are applied in order to obtain greater understanding of complex social phenomena such as learning (Green, Kreider & Mayer, 2005, p. 275).

With reference to the question of this researcher's philosophical and epistemological assumptions and prejudices about the nature of learning and how inquiry into learning should be conducted, therefore, it is clear that they reflect prejudices that tend more towards being "productive of knowledge" than "blind" (Usher & Bryant, 1989, p. 31). This is because their bias towards pluralism and epistemological fence-sitting is likely to be more conducive to openness, dialectical thinking and interpretive awareness than a strict adherence to a single theoretical position and/or framework. The challenge of the study for this researcher is therefore likely to be in the resolution of the complexity that comes with an openness to pluralist perspectives whilst at the same time avoiding coming to a sticky "epistemological dead end" (Sfard, 1998, p. 11).The second question of how the characteristics and attributes of the learning context and the learners influence decisions about how learning is conceptualised and in turn investigated in the study is now considered.

3.3.2. Looking through multiple learning lenses or pedagogisation[43] of the everyday?

As explained above, this study is an inquiry into adults' informal learning in the context of a local community technology project called GraniteNet, comprised of a community organisation, community technology hub and community web portal. The research participants in this context are younger and older adults participating in GraniteNet's diverse activities. This raises the issue of a tension that needs to be acknowledged in terms of how the research participants are positioned for the purposes

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[43]   This term refers to "the way in which educational relationships appear to be creeping across other social domains" (Erstad & Sefton-Green, 2013, p. 15) including in the workplace and in community settings.

of the study—that is, as learners—when they do not necessarily see themselves as learners and are also not necessarily "afforded the identity of learners" by those with whom they interact (Unwin, Fuller, Felstead, & Jewson, 2009, p. 110). There is thus potentially a split between how these so-called learners see themselves, their activities and their situations on the one hand and how they are viewed by this researcher and other interested scholars on the other (Edwards, 2009). Consequently, in viewing the situation and its participants through a learning lens, the researcher runs the risk of projecting her own perspectives and understandings onto the data, thereby distorting what phenomenographers refer to as the "second order perspective" (Marton & Booth, 1997, p. 134)—that is, the researcher's understanding of other people's understandings of phenomena in the world—and arguably "colonising the world of the everyday" with pedagogised versions of people's day-to-day lives (Erstad & Sefton-Green, 2013, p. 15). The ethical, philosophical and methodological issues this raises are dealt with in other sections of this chapter; however, as the study constitutes an interpretive inquiry into the nature of people's informal, everyday learning in the context of a Community Informatics and Learning Community project located in a particular geographical community, the positioning of respondents as adult learners for the purposes of this study is considered to be warranted.

The question of the influence of methodological choices on how learning is framed in the study is now considered, with reference, firstly, to the decision to undertake qualitative, case study research[44], and secondly, to the choice of phenomenography as the research approach.

3.3.3. The choice of a single site case study: A case of social constructivism

The decision to do case study research is bound up with the researcher's decision to undertake an investigation into the practice problems of learning in GraniteNet for her doctoral study, where the case presents an opportunity to investigate the phenomenon of interest; as such, it is a qualitative, single site, instrumental case study (Stake, 2005) of learning in Community Informatics. The decision to focus on the

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[44] Stake (2005) notes that "case study is not a methodological choice but a choice of what is to be studied" (p. 443). Although this assertion is accepted, the justification for the choice to undertake case study research has been included here for the purposes of logical organisation of the discussion.

context as a case of Community Informatics impacts on the way learning is conceptualised in the study. For example, Hodkinson and McLeod (2007) maintain that "there is a natural affinity between an ethnographic, case study research approach and participatory ways of conceptualising learning" (p. 5). This "natural affinity" (Hodkinson & McLeod, 2007, p. 5) also extends to the question of how learning is seen to occur, or what Sfard (1998) refers to as "visions of the mechanism of learning" (p.7), where the focus is more likely to be at the level of the collective, or social, rather than the individual.

As a counterpoint to this view, case study research is seen by other researchers to subscribe to a broadly constructivist epistemology (Stake, 2005) that accommodates both individual and social constructivist conceptions of learning. For example, whilst acknowledging that "most case study is the empirical study of human activity" in particular contexts, Stake (2005, p. 454) sees knowledge as being socially and individually constructed, and as experiential, for both respondent and researcher. Stark and Torrance (2005) agree, asserting that case study research lies "very much within the 'social constructivist' perspective of social science" and that its overriding purpose is to "represent the meanings that individual social actors bring to those settings *and* manufacture in them" (p.33) [emphasis added]. Thus, individual and social constructivist and participatory conceptions of learning may be accommodated in case study research, and it is rather the particular conception of learning embedded in the phenomenographic approach chosen to investigate learning in this context that potentially has the most impact on how learning is framed in the study, as outlined in the following section.

3.3.4. The influence of phenomenography on how learning is framed in the GraniteNet study

In their review of the methodological issues and dilemmas involved in researching conceptions of learning, Hodkinson and McLeod (2007) provide a cautionary advice for the researcher, stating that "no methodology can act as a conceptually neutral lens, transparently revealing what learning is" and maintain that "in relation to decisions about how learning should be conceptualised, research methods are all biased" (p. 9). This is particularly important in relation to the choice of phenomenography as the research approach adopted for this study, as it is employed not only as a method for investigating the research questions, but for conceptualising

and formulating the research questions and conceptual framework for the study at the outset (Sin, 2010). As such, how learning is conceptualised in the study is driven by a conception of learning framed from the perspective of phenomenography.

Learning in the phenomenographic tradition is seen as a relational phenomenon, based on individuals' conceptions and experiences of the world that are "constituted as an internal relation" between the individual and their environment (Marton & Booth, 1997, p. 13). According to Marton and Booth (1997, p. 13) this learning comes about through the learner's discernment of variation: that is, there is a limited number of qualitatively different ways that phenomena can be experienced, and by learning about all the different ways that other people see and experience the world and phenomena in the world, "we will learn what the world is like and what the world could be like". Booth (2008) articulates the "fundamental epistemological stance" (p. 451) of phenomenography as follows, contrasting it with both behaviourist and cognitivist perspectives of learning:

> The phenomenographic stance is more readily related to the socio-cultural views of knowledge as relational, though more interested in knowing and learning in individuals than in cultures, and more in a pedagogical context than in an historical context. Commonalities can also be seen with the social constructivist epistemology (Booth, 2008, p. 451).

In acknowledging this perspective, the author is also in agreement with Richardson (1999), who proposes that phenomenographic researchers should, in principle, be particularly interested in the situated cognitivist position, which "suggests that thinking (both in everyday life and in education situations) is influenced by the immediate situations and cultural contexts in which it occurs" (p. 65). This is consistent with Marton and Booth's (1997) position that "the world we deal with is the world as experienced by people, by learners; neither individual constructions nor independent realities" (p. 13) and which can be accessed by the researcher via "discovery" of respondents' conceptions and "ways of experiencing" (p. 96) phenomena as they are articulated in the phenomenographic interview and reflected in other artefacts constructed by the respondents (Marton & Booth, 1997). In this sense, the "conceptions" representing the "internal relation" (Marton & Booth, 1997, p. 13),

between person and world referenced by Barnard, McCosker and Gerber (1999), as "relational knowledge" (p.217) can feasibly be described as situated cognitions insofar as they can also be said to represent respondents' "experiential knowledge" (Stake, 2005, p. 454). Further, the similarities between the experiential knowledge sought by case study researchers, the conceptions and ways of experiencing in the phenomenographic research tradition[45] and Dewey's concept of experience as an ontological construct (Biesta, 2009; Elkjaer, 2009) bode well for the epistemological and methodological integrity of the study.

Therefore, with respect to the bias said to be inherent in every research methodology (Hodkinson & McLeod, 2007), it is argued that the blended situated cognitivist-social constructivist epistemology embedded in phenomenography poses no significant conceptual or methodological dilemmas for the study. Indeed, the idea of taking a research approach traditionally used to investigate learning in formal education settings into an informal community learning setting presented an exciting opportunity for experimentation: Would it work? What might be revealed that would contribute to knowledge about informal learning in community settings, and specifically, about learning related to people's interaction with digital technologies? Is there *really*, as Phenomenographers assert (Booth, 2008; Marton, 1988; Marton & Booth, 1997), a limited number of qualitative different ways that phenomena in the world, including learning, are experienced? Thus, this researcher found the opportunities potentially afforded for researching (learning about) learning by adopting a phenomenographic approach to investigating learning in the GraniteNet project to be immediately apparent and compelling[46]. With its focus on illuminating the object of research from the "second order perspective" (Marton & Booth, 1997, p. 179)—that is, the researcher coming to know and understand how the phenomena in question are perceived and experienced by the respondents—phenomenography, as a

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[45]   Marton and Booth's position is disputed by Richardson (1999) and Saljo (1997), who from a position of social constructionism, maintain that conceptions in phenomenography do not necessarily represent "ways of experiencing" and are rather "accounts" of respondents' experiences that are "constructed in the context of the interview ", and as such represent "discursive practices", "accounting practices" and "artefacts of the interview situation" (Saljo, 1997, p. 173). For the purposes of this study, conceptions and ways of experiencing have been interpreted as framed by Marton and Booth (1997).

[46]   The intuitive and experiential appeal of phenomenography is acknowledged by Australian Phenomenographers Akerlind (2005) and Bruce (2006), who both recommend it as providing "a strong foundation for anyone wanting to make a contribution to the scholarship of learning and teaching" (Bruce, 2006, p. 7).

form of interpretivist social science, resonates with the epistemological perspectives outlined in the first section of this chapter. It is further proposed that this researcher's attraction to interpretive social science, Deweyan pragmatism and hermeneutic phenomenography is logical, as these research traditions have in common a commitment to a non-dualistic epistemology that recognises and values "different reals of experience" (Dewey, 1905, as cited in Biesta, 2009, p. 65; Marton & Booth, 1997; Neuman,1997).

With respect to the implications of this reflexive analysis for the study, therefore, it is evident that the researcher's pluralist epistemology and "first order non-realist" (Rollins, 1995, p. 55) world view are compatible with the epistemological assumptions underpinning the aims of the study and embedded in the over-arching research approach. Having critically analysed a number of important considerations for the design of the study, the research design is now outlined, explained and justified, beginning with articulation of the research questions.

3.4.   Research Design

Presentation of the research design begins with the articulation of the research questions linked to the Adult Education practice problems outlined in Chapter 1 and mapped to different learning aspects viewed through the lens of phenomenography (Marton, 1994, 1998). The resulting holistic conceptual framework guiding the investigation and analysis of the phenomenon of interest is then presented, along with a detailed explanation of the conceptual and analytical frameworks used for phenomenographic analysis of qualitative data generated in the study.

3.4.1. Research questions and conceptual framework: A phenomenography of learning in GraniteNet

As outlined in Chapter 1, the study's research questions are derived from the following "practice problems" (Usher, 1987, p. 31) emerging from this researcher's practice as an Adult Community Education researcher working with local community

members on a number of Learning Community projects, including the GraniteNet project:

- How is lifelong learning fostered, promoted and facilitated in a small, rural Australian community through a Community Informatics project such as GraniteNet?
- How can Information and Communications Technologies (ICTs) be used to support community learning (and, conversely, how can community learning support the development of digital literacy)?

The researcher's choice of phenomenography as an approach to a systematic investigation of these practice problems via an exploration of the experience of learning from the learners' perspectives directly influences formulation of the research questions with reference to three main applications of phenomenographic research into learning identified by Marton (1988, 1994).These are:

1. Those that focus specifically on the learner's "experience of learning" (Marton, 1994, p. 4428) (the process, or the how of learning).
2. Those that are concerned specifically with conceptions and experiences of the content (what is being learned) in "various content domains" or "different ways of understanding the content learned" (Marton, 1988, p. 191, 1994, p. 4428).
3. Studies that focus on people's experiences of phenomena "in their everyday world" (Marton, 1988, p. 191), (or "describing conceptions of the world around us") (Marton, 1994, p. 4428).

Marton (1998, p. 191) describes first two of these three applications as being focused on investigating the learner's experience of the content and process of learning in various "content domains" in formal education settings. In contrast, Marton (1994) describes the third application as a "pure phenomenographic 'knowledge interest' that transcends the educational context…encompassing the different ways in which we are capable of making sense of the world" (Marton, 1981, as cited in Marton, 1994, p. 4428). As the aim of this research is to investigate individuals' informal learning experiences in the context of their participation as community volunteers in GraniteNet's activities in its physical, virtual and blended learning and working

environments, all three applications of the phenomenographic approach listed by Marton apply. Marton's categorisation is thus adopted to guide formulation of the research questions and their subsequent investigation and analysis, with each of his three foci serving as one of three learning aspects to be investigated: the first, the learning process—as the learner's experience of how learning occurs; the second, the learning content—as the learner's experience of what is being learned; and the third, the learner's experience of the learning context and environment, constituting what Marton (1994) describes as "conceptions of the world around us" (p. 4428). Together, these provide an over-arching holistic conceptual framework for investigating the nature of participants' conceptions and experiences of learning in GraniteNet, as illustrated in Figure 3-2.
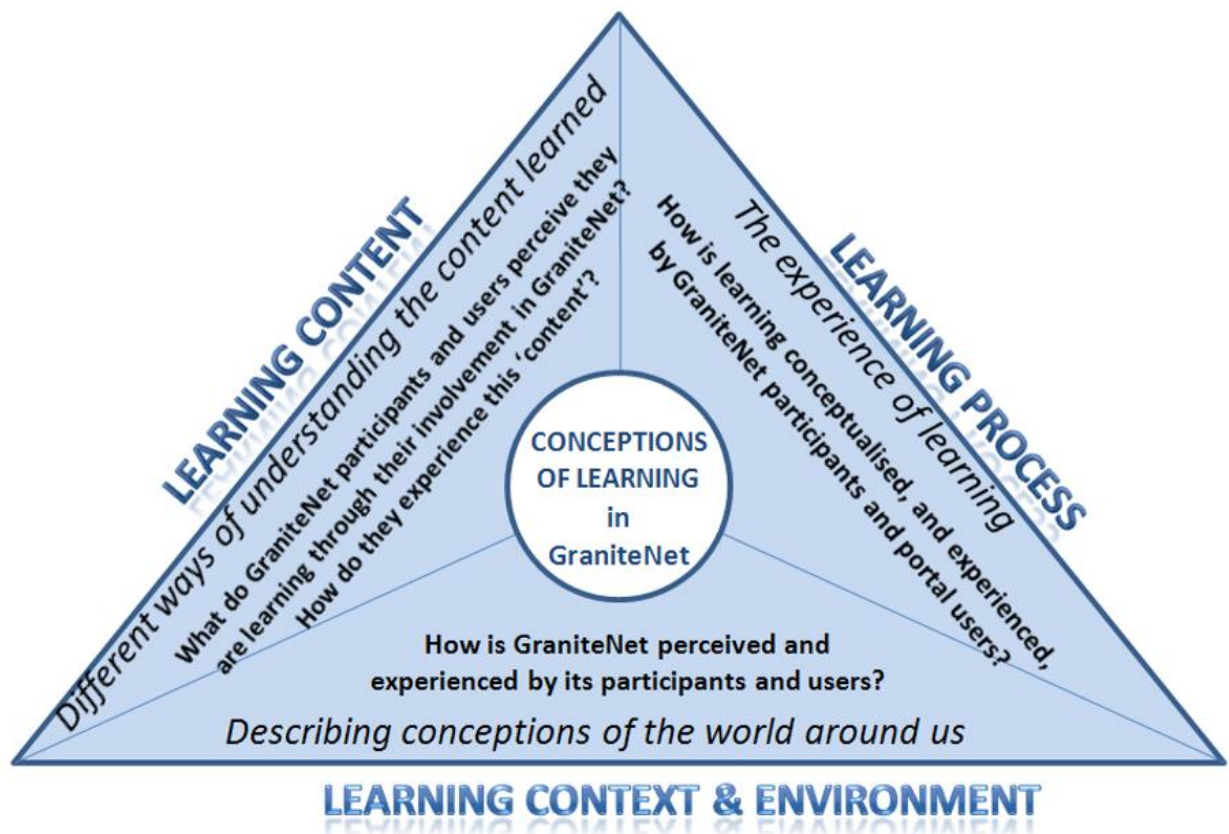
Figure 3-2   Holistic conceptual framework for investigating learning in GraniteNet, showing the unit of analysis and three aspects of learning under investigation. (Adapted from Marton, 1988, 1994).

Miller (2009) notes that "the theoretical framing of a research project has consequences for what is taken up as the unit of analysis" (p. 162). In phenomenographic studies, the unit of analysis is the conception, as the relation between the individual and a particular aspect of or phenomenon in their world. The

study's conceptual framework illustrated in Table   3-2 shows the study's unit of analysis (conceptions of learning in GraniteNet) at the centre and draws the three aspects—*content, process and context and environment*—together to address the research questions, thus serving as a holistic framework to "frame" (Harris, 2011, p. 110) the study's design and to guide data analysis and interpretation.

Embedded in above phenomenographic framework, the primary research question (RQ1) and its related sub-questions are posed. The relationship between Research Question 1 (RQ1), its sub-questions, the corresponding practice problem and the relevant learning aspects being investigated is elaborated below in Table *3-1*.

Table   3-1
Research Question One (RQ1) and Sub-Questions Mapped to Practice Problem 1 and Learning Aspects (adapted from Marton 1988; 1994)

Practice Problem 1: How is lifelong learning fostered, promoted and facilitated in a small, rural Australian community through a Community Informatics project such as GraniteNet?	
RQ1: What are the qualitatively different ways that learning is perceived and experienced by GraniteNet participants in the context of their participation in, and use of, GraniteNet?	
Sub-questions	**Learning aspects**
1. How is GraniteNet perceived by its participants and users?	Described by Marton (1994) as "... conceptions of the world around us", (p. 4428), and interpreted for the purposes of this study through a learning lens, this refers to participants' conceptions of GraniteNet as the learning context and environment.
2. What do participants and portal users perceive that they are learning through their involvement in GraniteNet?	Marton refers to this as "Different ways of understanding the content learned" (Marton, 1994, p. 4428). The learning aspect in this case is the content being learned.
3. How is learning in the context of GraniteNet experienced by participants and portal users?	Marton (1994) refers to this as "The experience of learning"(p. 4428). In this case the learning aspect is the learning process.

As this study is an inquiry into learning in the context of GraniteNet as a Community Informatics project, conceptions and experiences of learning that are directly related to and influenced by people's engagement with digital technologies are of particular interest, as highlighted in the second of the original practice problems.

This requires elaboration of the content aspect of the conceptual framework—which phenomenographers commonly refer to as the "what" (Marton& Booth, 1997, p. 84) of learning—to accommodate a focus on learning specifically related to the experience of learning about and learning to use digital technologies. This is articulated in a second research question and its related sub-questions illustrated in Table 3-2.

Table   3-2
Research Question two (RQ2) and Sub-questions Mapped to Practice Problem 2 and Learning Aspects (adapted from Marton 1988, 1994)

Practice Problem 2: How can Information Communications Technologies (ICTs) be used to support community learning (and, conversely, how can community learning support the development of digital literacy)?	
RQ2: What are the qualitatively different ways GraniteNet participants and portal users experience using, and learning to use, ICTs?	
Sub-questions	**Learning aspects**
1. How do respondents perceive and experience ICTs? (including the GraniteNet Community Portal)	Described by Marton (1994) as "… conceptions of the world around us"… and also as "different ways of understanding the content learned"(p. 4428), in this case, the learning aspects are both the learning context and environment and the learning content.
2. How do respondents experience using and learning to use ICTs? (including the GraniteNet Community Portal)	Referred to by Marton (1994) as the "experience of learning" and also "different ways of understanding the content learned" (p. 4428), in this case, the learning aspects under investigation are both the learning content and the learning process

The refinement of the conceptual framework illustrated in Figure 3-2 is elaborated in the discussion of the data analysis frameworks and procedures in sub-section 3.5.4 and presented in Figure 3-4

Having thus explicated conceptualisation of aspects of learning as the phenomena under investigation, the focus now turns to conceptualising the GraniteNet case study as an opportunity for their investigation (Stake, 1995, 2005).

3.4.2. The Single Site Case Study: The case as an opportunity to study the phenomenon

As stated by Stake (2005), "in the beginning, phenomena are given; the cases are opportunities to study the phenomena" (p.451). In this study, the phenomena being investigated are embedded in the context—or situation—of GraniteNet as the case study site. Investigating individuals' conceptions and experiences of learning in the context of GraniteNet demands engagement with complex social processes, and, according to Hodkinson and McLeod (2007), "case studies are the best way to study relational complexity" (p. 4). This view is borne out by a strong tradition of case study research in Education, including in formal education, workplaces and informal community learning settings alike (Sawchuck, 2008; Wiersma, 2000). With respect to the particular kind of case study research being conducted, the emphasis is on both description of the characteristics of a particular case (in this study, the case of GraniteNet) and on an in-depth exploration of particular phenomenon within a specific context (in this case, conceptions of learning in the context of GraniteNet) with a view to understanding the nature of these phenomena in relationship to their context. As such, the research adopts aspects of both "intrinsic" and "instrumental" case study research (Stake, 2005, p. 445); that is, the researcher is interested in investigating the unique characteristics of the case as well as using the case as a vehicle for illumination of particular issues of interest to the broader research and practice community. However, in this study there is a stronger emphasis on the instrumental interest, where the case presents an opportunity to study the phenomena under investigation— informal learning.

3.4.2.1. *Conceptualising and framing the case of GraniteNet*

For GraniteNet to be considered as a case for the purposes of case study research (Stake, 2005; Stark & Torrance, 2005), it needs to meet two criteria: firstly, it needs to be identified as a case of something; and secondly it must have a "specificity" or "boundedness" (Stake, 2005, p. 444). For the purposes of the study, GraniteNet is characterised as a rural Community Informatics, or community technology, initiative. As such, GraniteNet, as a case of rural Community Informatics, is both a unique case and "one among others…and we cannot understand a given case without knowing

about other cases" (p. 444)[47] .GraniteNet can also be characterised as a "bounded system" (p. 444); that is, it is a singular entity around which boundaries can be drawn that allow the researcher to "conceptualise the object of study" (p. 459). In this way, the case is able to be clearly differentiated from its context and from other entities, and particular features and activities that characterise the case can be identified and described in sufficient detail to enable readers to experience the case "vicariously and draw their own conclusions" about the study's findings (p. 450).

Drawing on examples provided by Stake (2005), a schematic representation of the GraniteNet case study is shown in Figure 3-3, illustrating the boundaries of the case and showing GraniteNet's three areas of operation as three sectors of GraniteNet's full circle of activity as a Community Informatics Project:

- Sector A: governance and management of GraniteNet Incorporated (or GraniteNet Inc.), the community-based organisation as an incorporated association[48];

- Sector B: delivery of services at the GraniteNet community technology hub, consisting primarily of informal, individual computer training and related support; and

- Sector C: administration and use of the GraniteNet community web portal (GraniteNet Inc., 2010).

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[47]   Other cases through which this case is recognised are reported as part of the literature review in Chapter 2.
[48]   Details of GraniteNet's organisational structure, activities and operations are provided in the case study description in Chapter 5.
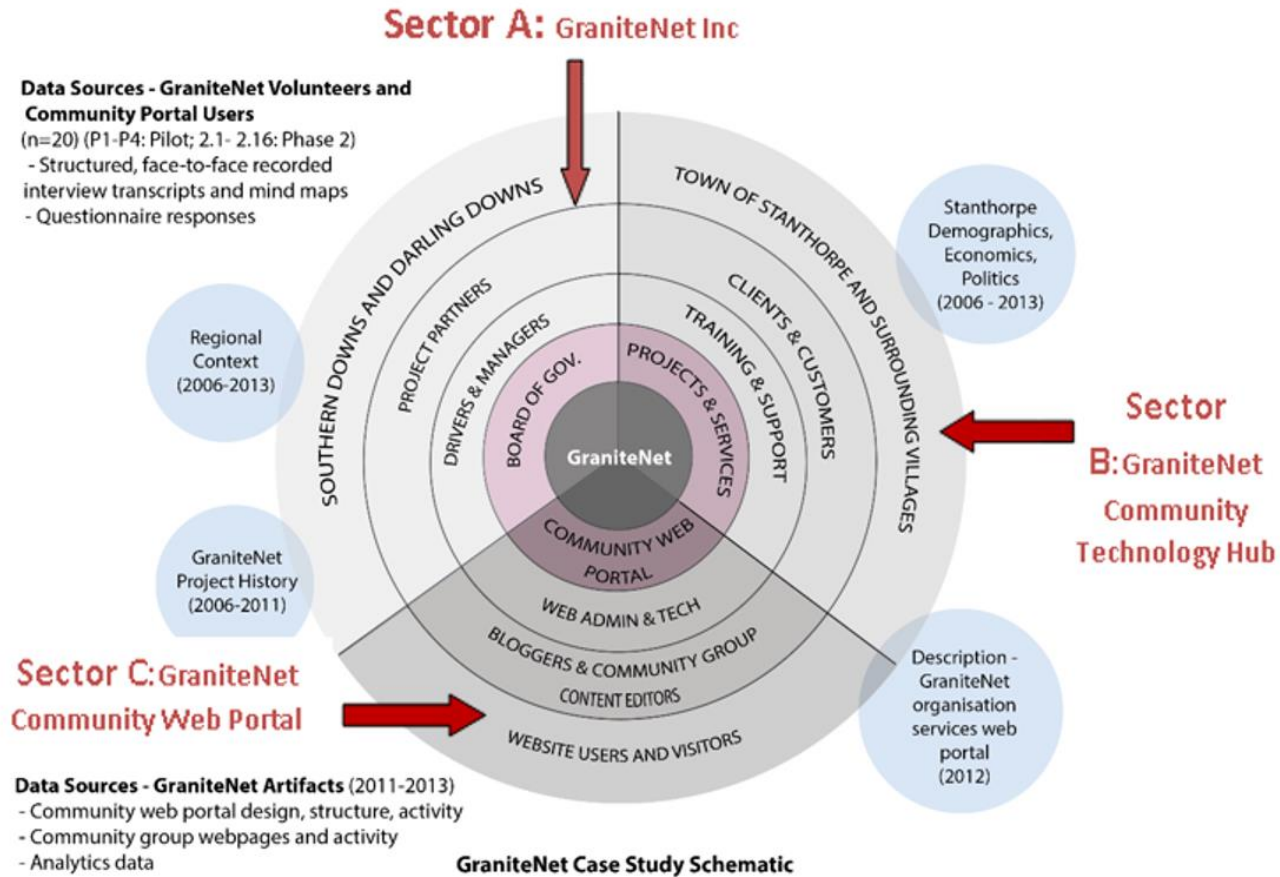
Figure 3-3   GraniteNet case study Schematic.

Using concentric circles emanating out from "GraniteNet" at the centre point, the schematic reflects an ecological or systems-eye-view of the GraniteNet case study, with the diverse activities undertaken by GraniteNet participants in each sector shown as being either located closer to, or farther away from, the main centre of activity in each sector. For example, in Sector A—representing the community-based organisation GraniteNet Incorporated—the Board of Governance is shown at the centre of the circle, followed by "drivers and managers" and "project partners" (such as local community organisations, the Shire Council and the regional university) located progressively further towards the periphery. At the periphery of Sector A, the case of GraniteNet is bounded by its regional and local government jurisdictions of the Southern Downs Shire and Darling Downs region.

In Sector B, representing the GraniteNet community technology hub located in the town's central business district, administration of GraniteNet's on-site "projects and services" is shown at the centre of the schematic. These projects and services include provision of public computer access, training and support services by GraniteNet volunteers to clients and customers (members of the local community), who are in turn located more towards the periphery, drawn from among the residents of the town of Stanthorpe and surrounding villages. In Sector C, which represents the GraniteNet community web portal (www.granitenet.com.au), website administrators, managers and technical volunteers are located closest to the centre and community bloggers and community group Content Editors further towards the periphery, drawn from among GraniteNet's broader base of community portal users and visitors, who constitute the outer periphery of Sector C.

As indicated in the notes towards the left of the schematic diagram, the data sources for the case study are distributed across the three sectors and are identified as being either *people* (that is, diverse GraniteNet volunteers, clients of the community technology hub and users of the community portal, viewed for the purposes of this study as adult learners)[49], or *artefacts* (that is, the GraniteNet portal itself, its design

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[49]　The reader is referred to Figure 4-1 in Chapter 4 in which the distribution of the study's 20 respondents in the case study schematic is presented as part of the outline of data sources and sampling decisions.

and its activity reifications, including community blogs and community group web pages, and analytics data[50]) (Sector C). Represented in the diagram by the blue circles floating at the periphery of the concentric circles, historical and other contextual information about the GraniteNet project contributing to the case description are included, drawn from selected reports and documents, project publications and also from the researcher's own experiential knowledge of the case.

Having thus conceptualised the case, the positioning of the researcher in relation to the case of GraniteNet and strategies used by the researcher to manage her role in the case are now briefly discussed.

3.4.2.2. *The researcher as peripheral participant in the case*

As explained in Chapter 1, the role of this researcher in the GraniteNet case study as a "peripheral participant" (Carroll, 2009, p. 9) is unique to the circumstances and history of her involvement in the GraniteNet project. As a "peripheral participant" (Carroll, 2009 p. 9) in the case of GraniteNet, the researcher is neither an external observer nor a complete outsider, in the sense in which the term *outsider* is normally used in case study and ethnographic research to refer to the researcher who needs to immerse herself in all the activities and complexities of the case in order to obtain an experiential understanding (Stake, 2005). Nor is she a *participant* in the sense in which this term is normally used in the case study literature, participating personally in the activity of the case (Stake, 1995). Rather, the researcher finds herself in the happiest of positions to conduct instrumental case study as a "peripheral participant" (Carroll, 2009, p. 9), who is no longer actively involved in the day-to-day management or activities of the organisation, but who maintains a "historicity" and "futuricity" with the organisation and its members that allow her to "envisage the future while drawing on historical exemplars in…sense-making" (Falk & Kilpatrick, 2000, p. 18). This affords the researcher an all-important experiential understanding of the case (Stake,

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[50]   The reader is referred to the case study description in Chapter 5 for a full description and analysis of these GraniteNet artefacts.

2005) whilst still allowing a certain distance to be maintained that is essential for obtaining an arms-length, etic perspective, as described by Carroll, (2009).

In the interests of ensuring an ethical and reflexive approach to the study, a set of ethical questions drawn from Stake (2005) regarding the role of the "participant-observer", adapted to suit the role of "peripheral participant" (Carroll, 2009, p. 8), was developed to guide the researcher's thinking about and management of her role in the conduct of the study. These questions relate to the level of the researcher's participation in the activities of the case, the positioning of the researcher as external expert and interpreter, the extent to which the researcher adopts a particular position in analysis and interpretation, and whose needs and interests take priority in terms of the mode of presentation and reporting of the findings (Stake, 2005). How each of these considerations is dealt with in terms of managing this researcher's role in the study is detailed at Appendix F.

Ethical issues and considerations in the conduct of the study are further discussed in the report of research methods and procedures in Chapter 4. The focus now turns to an exposition of the particular approach and methodology adopted to investigate learning in the context of the GraniteNet case study.

3.5. Methodology

3.5.1. Using phenomenography to investigate learning in GraniteNet: The approach adopted for this study

Bounded within the single site case study of GraniteNet, and embedded in the study's conceptual framework, phenomenography is adopted as the over-arching research approach "aimed at the mapping of the qualitatively different ways in which people experience, conceptualize, perceive, and understanding various aspects of, and various phenomena in, the world around them" (Marton, 1988 pp. 178-179)—in this case, respondents' conceptions and experiences of learning in GraniteNet. Crucial here is the underpinning premise that "each phenomenon can be experienced or conceptualised in a limited number of qualitatively different ways, and it is the task of phenomenography to map these possible understandings…" (pp. 189, 196).

Within the conceptual framework of phenomenography, "learning assumes a central importance because it represents a qualitative change from one conception

concerning some particular aspect of reality to another" (Marton, cited in Richardson, 1999, p. 53). Thus, phenomenography is linked to variation theory, which is said to have emerged from the phenomenographic research tradition and purports that "discerning variation brings about learning" (Bruce, 2006, p. 11). The approach adopted in the GraniteNet case study seeks to capture, empirically, different ways of experiencing GraniteNet, digital technologies and learning in the context of GraniteNet, as the phenomenographic interest, and to theorise about the nature of these differences in terms of variation[51]. Working from these premises, a number of "distinctive features" of the phenomenographic approach to research outlined by Marton (1988, p. 179) reflected in this study's conceptual framework and methodology are now outlined.

3.5.2. Distinctive features and principles of the phenomenographic approach applied in the study

Distinctive features of the phenomenographic approach reflected in this study include, firstly, a focus on discovery of respondents' conceptions and experiences of learning as the "second order perspective" (Marton, 1988, p. 179) through which "the researcher seeks to capture how the world appears to other people" (Marton, 1981 as cited in Pang, 2003, p. 146). Secondly, the focus is on identifying differences, or variation, rather than commonalities, with an emphasis on identifying the most distinctive, educationally significant aspects of these understandings and experiences (Marton & Booth, 1997; Marton, 1998). Thirdly, the researcher devises, through an iterative process of abductive analysis[52] (Limberg, 2008), categories of description that represent the range of qualitatively ways respondents experience the phenomenon in question. These categories of description are presented in turn, as the study's findings, in the "outcome space", highlighting the structural relationships among the categories of description (Marton, 1988, p. 189). Marton (1994) refers to the categories of

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[51]   Pang (2003) has proposed that "an interest in variation is the thread that runs through the phenomenographic movement"(p. 145) and in this sense, variation theory and phenomenography can be seen as two sides, or "faces" of the same coin, with phenomenography focused on the researcher discerning variation in people's conceptions and experiences of phenomena and variation theory focused on theorizing about this variation as it informs understandings of how people learn [referred to by Pang (2003) as the "first" and "second face of variation" (p. 145) respectively].

[52]   Limberg (2008) describes as "an abductive type of analysis" the process of "moving between empirical data and theoretical concepts to let one illuminate and contribute to the other" (p. 615). A detailed description and explanation of the data analysis process undertaken in the study is provided in Chapter 4.

description within the phenomenographic outcome space as representing "the collective mind" (p. 4428) whilst other phenomenographers refer to the "collective intellect" (Barnard, McCosker, & Gerber, 1999, p. 220) or the "collective consciousness" (Bruce, 2006; Bruce, Pham & Stoodley, 2002, 2005) of the target population in terms of understanding and awareness of a particular phenomenon at a particular point in time. It is this researcher's aim in this study to identify and describe the collective learning consciousness of GraniteNet at a particular point in time in its history based on an abductive analysis of participants' conceptions and experiences of learning within this context.

Adopting the phenomenographic approach to an investigation of the stated phenomena within the framework of a single site case study also points to the use of particular data sources, data collection techniques, analytical processes and interpretive frameworks that need to align with the three key principles of phenomenography: the principle of heterogeneity in sampling; reliance on techniques for sourcing respondents' own understandings of the phenomena in question; and the researcher's role in interpretive analysis as discovery and categorisation of conceptions in the study's outcome space. A detailed explanation of how these distinctive features and principles of phenomenography are applied in this study is presented at Appendix G and is also elaborated in the report of sampling, data collection techniques and data analysis procedures employed in the study in Chapter 4.

In addition to these established principles and features of the phenomenographic approach, particular approaches to qualitative data analysis and interpretation used in both case study and phenomenographic research inform the over-arching approach to data analysis adopted in this study and are now described.

3.5.3. Principles guiding phenomenographic data analysis

As a form of interpretive social inquiry, case study research is described as being "particular, descriptive, inductive and ultimately heuristic", seeking to faithfully "represent the meanings that individual social actors bring to [particular] settings and manufacture in them" (Stark & Torrance, 2005, p. 33). Similarly, phenomenographers are concerned with illuminating respondents' conceptions and experiences of the phenomena of interest in the social world, which requires the researcher's use of both

inductive and deductive logic to "discover" conceptions of learning inherent in the data and to "devise" or "construct" (Bruce, 1990, p. 1) categories of description that reveal and communicate their variation. This is referred to by Limberg (2008) as "an abductive type of analysis, moving between empirical data and theoretical concepts to let one illuminate and contribute to the other" (p. 615) and bears strong resemblance to the emic and etic analytical systems that Pike (1957) maintained need to be "brought to the fore if any event is to be well understood" (p. 142). There is also commonality between the phenomenographic approach to data analysis and the following "general principles of analysis" and "heuristic strategies" (Atkinson & Delamont 2005, p. 833) applicable to any social inquiry:

- Exploration of the social or natural world through practical engagements with it
- Systematic interaction between data and ideas using abductive logic
- Processual, iterative and emergent properties of data analysis
- Principled relations between first order (respondent) and second order (researcher) constructs
- Systematic relations between second order (researcher) analyses and models
- Derivation of working models and provisional understandings that are used to guide further empirical explorations (Atkinson & Delamont, 2005, p. 833).

Notwithstanding the potential for confusion arising from the different meanings attributed by ethnographers and phenomenographers to the terms "first order" and "second order"[53], it is clear that there are common principles of data analysis in interpretive social science research that apply equally to case study research and phenomenography and these have guided this researcher in her study. For example, the importance of researcher reflexivity and interpretive awareness in data analysis and interpretation are perspectives shared amongst researchers adopting an interpretivist approach and are highlighted in the section on ensuring research quality. Within the

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[53]   Note that the "second order perspective" in phenomenography, which refers to respondents' conceptions and ways of experiencing, does not correspond with the "second order constructs" referred to here by Atkinson and Delamont (2005), which are the researcher's constructs based on the respondents' "own first order" constructs.

context of this overall approach to data analysis adopted in the study, important conceptual and analytical frameworks devised by the researcher, drawing on and adapting those commonly used in phenomenography, are now explained and justified.

3.5.4. Conceptual and analytical frameworks guiding data collection, analysis and interpretation

In order to "come up with findings or insights" about students' experiences of learning, the early phenomenographers had to devise concepts, terminology and frameworks to help "explicate their research phenomenon" (Giorgi, 1999 p. 74). In a detailed review of 52 phenomenographic studies, Harris (2011) identifies two primary frameworks developed and used by phenomenographic researchers, which she refers to as a "what-how framework" and a "referential-structural framework" (p. 110)[54]. In her review, Harris (2011) highlights the work of Marton and Booth (1997) on conceptions of learning and Bruce's (2006, 2007) applications of the "referential-structural framework" as being the most fully and adequately explained and rigorously applied and, as such, having made the strongest contributions to "developing understandings about phenomena" (as cited in Harris, 2011, pp. 116-117). Consequently, these have informed the development of the conceptual and analytical frameworks used to frame the research questions and guide data analysis and interpretation in this study, albeit with important modifications.

The detail of how these frameworks and procedures have been interpreted and applied is now explained, beginning with the what-how framework, linked to the development of the study's conceptual and analytical framework. This is followed by an explanation of the referential-structural framework, linked to how respondents' conceptions and ways of experiencing learning in GraniteNet have been conceptualised for analysis. Particular variations of these two frameworks devised for this study are explained, and a third analytical lens provided by the phenomenographic construct, dimensions of variation, is also explained.

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[54] These two frameworks are said to have been developed based on theoretical concepts from phenomenology and Gestalt psychology including Brentano's theory of intentionality and Gurwitch's theory of awareness respectively (Giorgi, 1999; Harris, 2011; Richardson, 1999).

3.5.4.1.   *The what-how framework*

Based on Marton's (1994) "three lines of phenomenographic research" (p. 189), the study's conceptual framework presented earlier in Figure 3-2, which "frames" the research design (Harris, 2011, p. 110), also serves as the over-arching analytical framework and point of departure for the phenomenographic analysis. The analytical framework presented in Figure 3-4, which builds on and elaborates the study's original conceptual framework in Figure 3-2, illustrates how the three learning aspects (*content, process* and *context and environment*)–incorporating both the what and how of learning as well as the context for learning—are seen to constitute, holistically, respondents' conceptions and experiences of learning in GraniteNet, serving as the conceptual and analytical framework for interrogation of the two research questions. Thus, learning is "separated analytically (though not ontologically)…in general terms, into *what* is learned and *how* it is learned [emphasis in original]." (Booth, 2008, p. 451) This is referred to in phenomenographic studies as the "what-how framework" (Harris, 2011, p. 110), with the learning *context and environment* aspect adding "context" to the analytical separation as described by Booth:

> The context to the "what" and "how" of learning is…the learning environment that is offered, with its tasks and their intended concepts, principles and practices for learning. The sense that is made of the task or the content can be studied empirically to give qualitatively distinct categories, across the collective of participants and the results can then be turned onto the broader research questions…Thus, context can be added to the analytical separation, and this is important for studies related to networked learning (Booth, 2008, pp. 451-2).
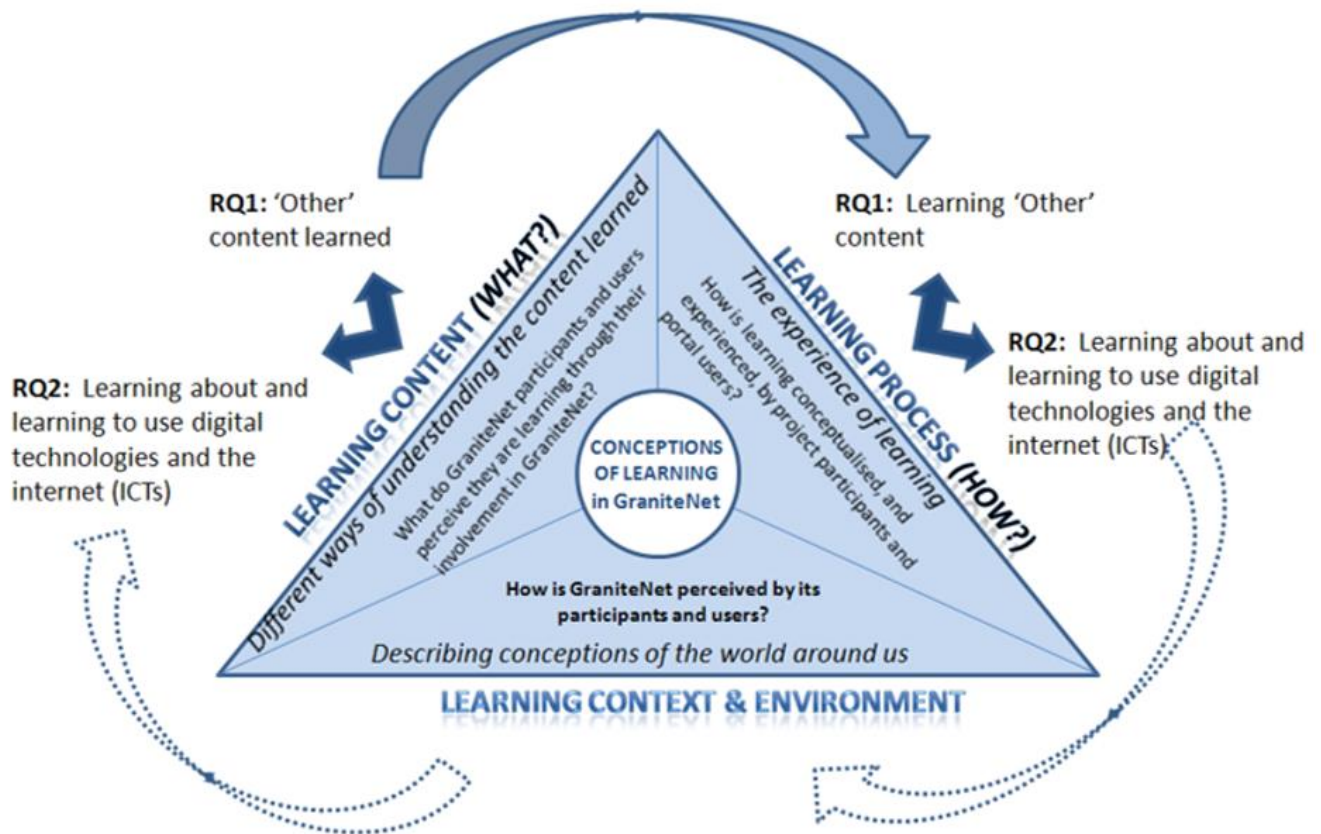
Figure 3-4   Holistic conceptual and analytical framework incorporating what-how framework (adapted from Marton 1998; Marton and Booth, 1997).

It is important to note that the above presentation of the study's conceptual and analytical framework belies the torturous route travelled by the researcher in the process of its full development and refinement during the pilot and subsequent phases of the study. As explained by Bruce (1990), analytical frameworks emerge, in part, as part of the dialectical relationship between the researcher and the data during the data analysis process. Booth (2008) also notes that "the process of data analysis requires the researcher to develop their own heuristic in accordance with the data available and the research questions it is designed to illuminate" (p. 453), which is what has occurred in this study.

By way of explanation, the logic of the inseparability of the "what" and "how" components of the what-how framework (represented by the "learning content" and "learning process" aspects of the above conceptual framework in Figure 3-4) became clear to this researcher during the early phases of the study, as did the separability, in contrast, of the 'learning context and environment' aspect from the content ("what")

and process ("how") of learning for the purposes of both analysis and description. That is to say, the researcher realised that it was not possible to describe conceptions and experiences of the content and process of learning separately in terms of a conception of learning (meaning that content and process are co-constituative). In contrast, whilst these conceptions of learning are always embedded in a context, it was possible, both analytically and ontologically, to describe respondents' conceptions and experiences of GraniteNet as the learning context and environment separately from their conceptions of the learning content and process. This is reflected in the analytical framework in Figure 3-4 by the unbroken arrow linking the "content" and "process" aspects—indicating their inseparability—and the dotted arrows linking these with the "context and environment" aspect of the conceptual framework, indicating both analytical and ontological separability.

3.5.4.2. *The referential-structural framework*

Moving on to the second of the two primary analysis frameworks identified by Harris (2011), the referential-structural framework is the framework used to analyse the structure of conceptions, or ways of experiencing, constituting the unit of analysis in this study. As such, individuals' conceptions and experiences of learning as the phenomenon under investigation are considered to be the "central unit of description" (Harris, 2011, p. 110; Svensson, 1997) and are broadly defined as "the meaning people ascribe to what they experience" (Barnard et al., 1999, p. 215). The links to experience and cognition, both seen as being critical constituents of a conception, are described by Barnard et al. (1999) as follows:

> Conceptions are abstractions from reality [that] vary and arise from the interrelationship between our beliefs, social imperatives, expectations and experience…The starting point in the development of a conception lies in [the] relation to a part of reality both experienced and thought about (Barnard et al., 1999, p. 118).

The model of a conception illustrated in Figure 3-5, adapted from Bruce (1990) and Bruce et al., (2002), illustrates the interpretation of a conception adopted in this study. As illustrated in the diagram, the relation between the experiencing "subject"— in this case, the GraniteNet participants—and the experienced "object" (or phenomenon)—in this case, learning in the context of GraniteNet (defined as a

conception or way of experiencing)— is illustrated and further elaborated in terms of the structure of the subject's awareness of the object. This awareness is comprised, in turn, of both a referential and a structural component. The referential component refers to the meaning that the phenomenon has for the subject, for example, its "significance and value" (Bruce, 1990, p. 4). The structural component "describes how relevant parts of the world are seen and are related" (p. 6) with reference to:

1. what is "thematised"[55] or "focal in [the respondent's] awareness"
2. what is "at the margin of awareness" (or in the "ground")
3. how the subject delimits or discerns the object from its context (Marton & Booth, 1997, pp. 82, 87).
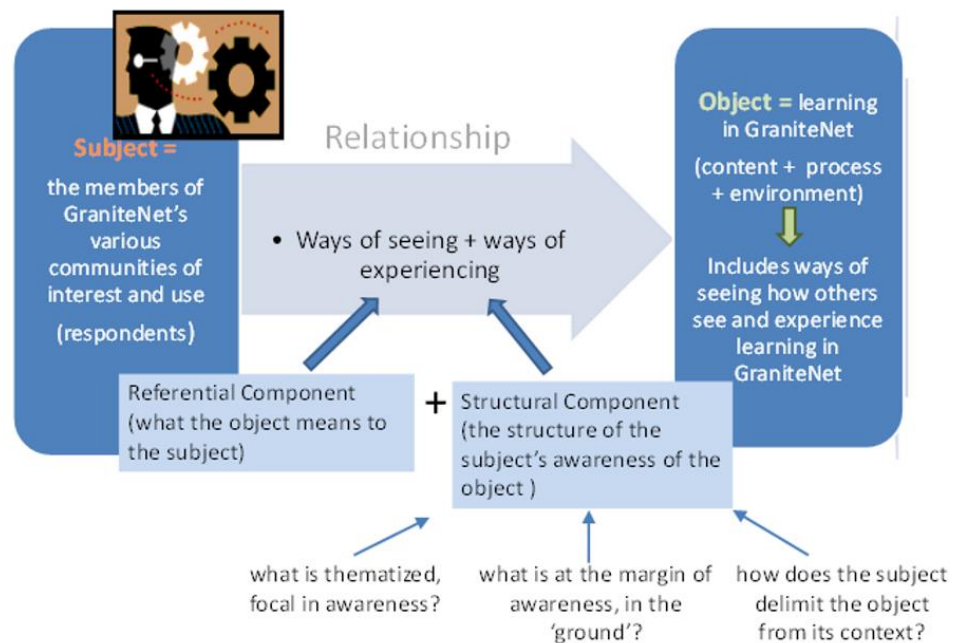
Figure 3-5   Structural and referential components of a conception adapted from Bruce; (1990), Bruce, Pham and Stoodley (2002).

The referential and structural components of the conception are co-constituitive and "dialectically intertwined" (Marton& Booth, 1997, p. 87) and serve to characterise

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[55]   A phenomenon is said to be "thematised" when it can be "explicitly talked about and discussed and can be the object of conscious planning and analysis" (Saljo, 1979, cited in Richardson, 1999, p. 56).

and differentiate the various conceptions of phenomena as they are reflected in the data.

Importantly, the particular way in which conceptions are framed in this study builds on, yet diverges from, the work of Marton and Booth (1997) and Bruce and her colleagues (Bruce, 2009; Bruce et al., 2002) in two critical ways. Firstly, although Marton and Booth's (1997) use of the terms "conceptions" and "ways of experiencing" to represent "how the world appears to people" and the "different ways of experiencing a phenomenon" (p. 114) have been adopted, the term conception has been expanded to refer to both of the following, as illustrated in Figure 3-5:

- *Ways of seeing or perceiving* GraniteNet and learning in GraniteNet identified in the data. This includes how the respondents see, conceive of, perceive these phenomena (referred to in phenomenographic studies as the "second order perspective") as well as how the respondents see the ways that others see or experience these phenomena (referred to in this study as an "expanded second order perspective"[56]).
- *Ways of experiencing* GraniteNet and learning in GraniteNet. This refers to respondents' first person, direct experiences of the phenomena as distinct from their perception or conception of the phenomena more generally, which may include their understandings of how others see and experience these phenomena.

The distinction between these two perspectives is further clarified in the elaborations of the categories of description in the presentation of the phenomenographic outcome space in Chapter 6.

Secondly, a modified version of Bruce's (1990) and Bruce et al.'s (2002) application of the referential-structural framework is used in the study to inform this researcher's interpretation of the referential component of the subject's awareness. That is to say, whilst the concepts of "significance" and "value" (Bruce, 1990, p. 4) are used to illuminate the meaning of learning in GraniteNet for the respondent as the

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[56]   The respondent expanded second order perspective was discovered in the process of data analysis and is therefore discussed as a contribution to methodological knowledge in Chapter 8.

referential component, the construct of the "internal and external horizons of awareness" (Harris 2011, p. 115) is not used to analyse the structural component of conceptions[57]. Instead, the researcher uses the constructs listed in points 1-3 above, as illustrated in Figure 3-5, to analyse the structure of the respondent's awareness of learning in GraniteNet; that is: what is thematised by the respondent, or focal in the respondent's awareness; what is at the respondent's margin of awareness; and how the respondent delimits (distinguishes) the phenomenon (in this case, GraniteNet) from its context.

3.5.4.3. *Dimensions of variation*

A third important conceptual and analytical resource used in phenomenography brought to bear in the analysis of data in this study is the construct of dimensions of variation. Examples of dimensions of variation from the natural world are "colour" and "shape" or "form", so that a blue mug or cup[58] , for example, can be discerned or experienced by the subject by virtue of the subject's awareness of its particular qualities in different dimensions of variation, that is, blue "as a value in the dimension of colour" (Runesson, 1999, as cited in Cope, 2004, p. 5) and in the shape and form of a container with a handle, as qualities in the dimension of form. By apprehending dimensions of variation such as these, the individual is able to discern how the mug is delimited from its context (that is, how it is differentiated from the table on which it sits, for example) as the structural component of a conception, and to experience the meaning of the mug in terms of its significance and value, as the referential component of the conception (Bruce, 1990).

Applying the construct of dimensions of variation to the analysis of individuals' conceptions and ways of experiencing complex social phenomena, such as the experience of learning, presents a significantly more challenging conceptual exercise than the blue mug example, and one which, according to (Pang, 2003) "requires a shift in the primary emphasis…from methodological to theoretical concerns" (p. 146). That is, in order for the researcher to describe the variation detected "in the different ways in which people experience various phenomena" (described by Pang as the "first face

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[57]   The construct of the internal and external horizons of awareness was found by Harris (2011) to be particularly problematic in terms of its inconsistent use in the studies she reviewed.
[58]   The example of the blue mug or cup is frequently used in the literature to illustrate the concept of dimensions of variation (see for example Cope 2004; Marton & Tsui, 2004; Runesson1999 as cited in Cope 2004).

of variation"), she "also describe[s] the variation in various aspects of the world around as experienced by the learners" (described by Pang as the "second face of variation") (pp. 145,148). Important for this study is this researcher's primary focus on the first face of variation—that is, describing the variation detected by the researcher in the different ways respondents experience learning in GraniteNet—and secondary focus on describing respondents' experiences of variation as the second face of variation[59]. Again, this is further elaborated in the interpretation of the phenomenographic findings in Chapter 7.

Having outlined the approach adopted to the phenomenographic investigation into learning in GraniteNet conceptualised as an instrumental case study and detailing the conceptual and analytical frameworks guiding the study, the focus now turns to explaining how the rigour of research processes, trustworthiness of results and overall quality of the research are ensured.

3.5.5. Ensuring research quality: Researcher reflexivity and interpretive awareness

The term quality is used in this study as an over-arching term to encompass considerations of trustworthiness, or credibility, seen as criteria for evaluating research quality in an interpretivist paradigm (Collier-Reed, Ingerman & Berglund, 2009; Denzin & Lincoln, 2005).This is inclusive of the requirement for rigour in the research process and is underpinned by researcher reflexivity, incorporating both interpretive awareness (Sin, 2010) and a commitment to ethical practice (Groundwater-Smith & Mockler, 2007). Interpretive awareness "is when the researcher acknowledges and explicitly deals with his or her own preconceptions throughout the research process" (Sin, 2010, p. 311) and also refers specifically to the need for the researcher to demonstrate that her "interpretations during data analysis have been controlled and checked" (Cope, 2004, p. 7). For the purposes of this study, the term reflexivity is used to refer to the researcher's reflexive engagement in the design and implementation of the research, and to implementing strategies to maximise interpretive awareness specifically with respect to processes of interpretation during data collection and analysis, and in the overall interpretation of the study's findings. To this end, a set of

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[59]   This distinction is further clarified for the reader in the presentation of the study's findings in Chapter 6, which includes an exposition of a set of dimensions of variation and critical differences in respondents' conceptions and experiences of learning in GraniteNet.

five elements of interpretive awareness was devised by the researcher and used as a guide to inform the data collection, analysis and interpretation phases of the study, as outlined at Appendix H and elaborated in Chapter 4.

Related to these questions of research quality are particular philosophical, conceptual and methodological challenges and dilemmas presented by the application of phenomenography to the investigation into learning in GraniteNet. These challenges, some of which are identified in the literature and most of which are embedded in the assumptions of phenomenography linked to its origins as an approach to investigating students' learning in formal Education settings, and their implications for the conduct of the study, are now briefly discussed.

3.5.6. Challenges and potential limitations of the phenomenographic approach and how they are addressed in the study

3.5.6.1. *A cognitivist conception of learning*

Challenges associated with using phenomenography to investigate learning in GraniteNet relate to four potentially problematic characteristics of the phenomenographic approach when it is applied to an investigation into learning in an informal, community learning setting such as GraniteNet. The first is the strongly cognitivist orientation to learning embedded in phenomenography, that reflects a conception of learning as acquisition of conceptual, usually discipline-based knowledge (Hazel, Conrad, & Martin, 1997). This is potentially at the expense of more "embodied" understandings of learning and knowing that accommodate emotional and practical dimensions (Hodkinson, Biesta & James 2008, p. 31) and acknowledge the importance of learning about "self-in-the-world"[60] in addition to learning about the world and phenomena therein. Related to this is phenomenography's purported ignorance of the "social structures that have formed around knowledge and how to manoeuvre in them" (Booth, 2008, p. 451).

This potential limitation is addressed in formulation of the research questions and the holistic conceptual framework for this study, which are designed to encompass

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[60]   Illeris' (2007) definition of the self has been adopted, whereby "the self takes the nature of a relation, i.e. the relation or the perception the individual has to, or of, him-or herself—in contrast to the concept of personality, which centres on qualities the individual has or is attributed with" (p. 71).

a broad interpretation of what is being learned by participants, referred to as the "content" of learning. This broad and holistic interpretation of the learning content includes learning about self-in-the-world in addition to learning about the world and phenomena in the world, and also to learning practical skills, in this case learning to use digital technologies and the internet, in addition to acquiring propositional knowledge. Moreover, consideration of the "social structures that have formed around knowledge" and how participants "manoeuvre in them" (Booth, 2008, p. 451) is addressed via incorporation of the learning context and environment as one of the three learning "aspects" in the holistic conceptual and analytical framework in Figure 3-2 and also via inclusion of "self" as a content domain. Finally, as elaborated in Chapter 4, the holistic conception of learning is also reflected in the construction of the data collection instruments and protocols, affording identification of more embodied understandings of learning and knowing.

3.5.6.2. *Phenomenography's normative premise*

The second challenge of the phenomenographic approach relates to the normative premise underpinning phenomenography, where some ways of seeing phenomena and experiencing the world, including approaches to learning adopted as a result of conceptualising a phenomenon in a particular way, are judged to be better than others (Marton & Booth, 1997). This normative premise is problematic for investigating adults' informal learning in a community setting, where different sets of norms and values are at play to those in formal education settings, and where a valuing of one particular way of seeing the world over another doesn't necessarily make sense as it might in a formal education setting. Concerning this dilemma, Marton's (1988) point that "we should realize…that certain conceptualisations may be more functional in certain contexts than others" (p. 196) is considered to be a reasonable premise from which to work for the purposes of this study. Further, Marton and Booth (1997) maintain that knowledge and experience are always partial, and that learning is coming to know, understand and experience the world—and phenomena in and of the world—in newer and ever more complex, profound and complete ways. In a formal education setting, this usually implies alignment with curricular goals (Booth, 2008) or with a teacher's intended conception, or that particular ways of perceiving, understanding or experiencing are seen to be "more efficient in terms of some given criterion" (Richardson, 1999, p. 55). For learners in community and informal, workplace learning

settings such as GraniteNet, it could mean coming to see a phenomenon in "a more powerful way for future practice" (Booth, 2008, p. 451). It follows that more desirable conceptions of learning in GraniteNet, then, would be those that reflect more complex, profound and complete understandings that would in turn enable the individual to make sense of the world—and phenomena in the world—and function effectively in more and more situations, underpinning their efficacy as adult learners, effective users of ICTs, workers, members of their families and communities, and citizens of the world.

3.5.6.3.   *Decentring the individual*

A third challenge posed by phenomenography relates to the expression of the findings of a phenomenographic study at the collective, rather than at the individual, level, which according to some scholars, potentially risks "decentering"—or even disappearing—the individual learners (Hodkinson and McLeod, 2007, p. 4). In phenomenography, the unit of analysis is the "conception" or "way of experiencing" the phenomenon of interest; as explained by Marton (1994), "the individual is not the unit of analysis…as the same participant may express more than one way of understanding the phenomenon"(p. 4428). It is this researcher's view that one of the strengths of the approach adopted in this study for investigating learning in the context of GraniteNet is the capacity for the data to reflect both an individual and a collective experience of learning, such that the individual experience is woven into, and thus reflected in, the findings.

3.5.6.4.   *Phenomenography's purported ignorance of context and change over time*

Finally, phenomenography is criticised in the literature for its purported ignorance of contextual and cultural factors (Booth, 2008; Richardson, 1999) and also of change over time (Collier-Reed et al., 2009; Saljo, 1994).The study's holistic conceptual framework reflects Marton and Booth's (1997) position that "we cannot experience anything without a context" (p. 89) and that the learning context is studied as it is experienced and articulated by the learner; that is, via illumination of the second order perspective, affirming the pragmatist view that "the objective world is always woven into the subjective experience" (Elkjaer, 2009,p. 80). With regard to the criticism that phenomenography is ignorant of change over time and able only to provide a snapshot of conceptions at a particular moment in time (Collier-Reed et al.,

2009; Saljo, 1994), the author acknowledges this limitation. However, she is also mindful that it is not the aim of the study to investigate and analyse the evolution of GraniteNet nor the participants' changing conceptions of learning over time, although the value of such a study is acknowledged[61], and to some extent is addressed in the case study description in Chapter 5.

An important implication is that the study's outcome space, presented for interpretation in the context of the case study report, must be acknowledged as representing a moment-in-time snapshot of the qualitatively different ways learning in the context of GraniteNet is experienced at the time of data collection. Whilst this researcher agrees that such a snapshot may be less useful for the purposes of influencing practice at the local level (depending on the time frame between when the data is collected and reported back to stakeholders), the insights generated make a significant contribution to knowledge about the nature of adults' informal learning in the digital era, more generally speaking. This point is taken up in the discussion of implications of the study's findings in the final chapter.

3.6.   In Defence of the Research Design

As the objective of the research is to inquire into learning as it is experienced by individuals in the context of their involvement in GraniteNet, as an essentially relational phenomenon (Marton & Booth, 1997), the choice of phenomenography within the single site case study is seen to be the best fit for this purpose. On the basis of the above presentation of the stated research questions and their associated practice problems, the methodological choices for their investigation, the researcher's reflexive orientation to the study and the detailed explanations and justifications of theoretical, conceptual and analytical frameworks underpinning the study, the research design is considered to be defensible. Moreover, alignment of the paradigmatic orientations and epistemological assumptions of interpretive social science, case study research and phenomenography with the purpose, focus and context of the study, and the

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[61]   Such a study is the remit of developmental phenomenography (see for example, Green & Bowden, 2005). Marton and Booth's (1997) assertion that respondents' conceptions experiences of the world and phenomena in the world at a particular point in time may "equally reflect a feature of a culture in the past or the present" (p. 116) is supported in the findings of this study and further discussed in Chapter 7.

researcher's own philosophical and epistemological perspectives, is evident, lending integrity to the research design, contributing to its defensibility.

3.7.   Conclusion

This chapter presented an outline of the research design, its rationale and justification and a description of the research approach and methodology for the GraniteNet case study. Points of departure for the research design were outlined with reference to philosophical, contextual and methodological considerations and their implications for the study discussed. The over-arching conceptual framework guiding the investigation of the stated research questions was presented and justified with reference to authoritative literature on the phenomenographic approach to investigating learning, and the conceptual and analytical frameworks used to guide data collection, analysis and interpretation were explained and justified. Considerations of research quality were addressed with reference to the role of the researcher and researcher integrity, reflexivity, and interpretive awareness and also to how particular challenges presented by using the phenomenographic approach to investigate informal, community learning are resolved. The chapter concludes by reiterating the defensibility of the study's design.

The report of the research methods undertaken including sampling, data collection and analysis instruments and procedures, and a discussion of limitations and their implications for the study's findings are presented in Chapter 4's report of the research methods undertaken.

Chapter 4.
Report of Research Methods

> Understanding is a process of making sense of the world around
> us...When we understand something we can explain it, describe it,
> analyse it in relation to other, similar phenomena and act on and in
> the world in new ways (Williamson, 2006, p. 51).

4.1.   Introduction

In this chapter, an overview of the study's emergent three-phase structure is presented as a prelude to a detailed account of the research methods and procedures undertaken in the pilot study and secondary and tertiary research phases. Particular attention is paid to presenting a "full and open account" (Booth, 1992, p. 55) of the research process, including structured critical reflection on the pilot study and subsequent refinement of procedures and instruments for data collection and analysis in the secondary and tertiary research phases. These include data sources and sampling; data collection techniques, instruments and procedures; the analytical framework and procedures for data analysis and interpretation; and strategies employed to maximise research quality at each stage of the research process. A matrix mapping the data collection instruments to the two research questions and copies of draft and revised instruments for data collection are included at the Appendices. Detailed descriptions of the six-step phenomenographic interview procedure and 10-step phenomenographic data analysis procedure devised by the researcher are also provided. Procedures for ethical conduct of the study are outlined and emerging ethical issues reported. The chapter concludes with a brief discussion of the study's methodological strengths and limitations and their implications for the trustworthiness of the findings and the overall credibility of the study.

4.2.   Data Sources, Sampling and Data Collection Techniques

As outlined in the discussion of key features and principles of phenomenographic and case study research in the previous chapter, adopting the phenomenographic approach to investigation of the stated phenomena within the framework of a single site case study points to the use of particular data sources and data collection techniques, predominantly participant interviews and artefact analysis

(Akerlind, 2002, 2012; Booth, 2008; Marton, 1988; Marton & Booth, 1997; Sin, 2010).
Data sources for the GraniteNet study therefore included:

1. a purposive sample of 20 GraniteNet participants drawn from among GraniteNet's diverse communities and networks of interest and practice.

2. supplementary data in the form of GraniteNet artefacts that would contribute to the case description and interpretation of the phenomenographic outcome space.

In accordance with the key features and principles of qualitative case study and phenomenographic research outlined in the previous chapter, the sample of respondents for the study was purposive to maximise heterogeneity (Akerlind, 2002; Marton & Booth, 1997; Sin, 2010; Stake, 2005). Bearing in mind the recommendations of more experienced phenomenographers[62], the researcher determined that the maximum number of respondents for her study would be 20 and that the desired heterogeneity would need to be established within this constraint. Respondents were drawn from among the pool of participants in GraniteNet's three sectors of activity, as illustrated in the case study schematic presented in Figure 3-3, with the following groups targeted:

- Volunteers involved in the management of GraniteNet Incorporated, the community-based organisation
- Volunteers involved in the day-to-day administration and delivery of services from the GraniteNet community technology hub, including those involved in delivery of basic computer skills training to Seniors Kiosk customers and other community members
- Volunteers involved primarily in activities related to the administration of the GraniteNet community web portal and training of community group Content Editors

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[62] A review of phenomenographic studies conducted by the researcher as part of her literature review revealed typical sample sizes anywhere from six to 25 or more respondents [acknowledging that studies with sample sizes of more than 25 were usually undertaken by teams of researchers]. Akerlind (2002) refers to the difficulties for a sole researcher in managing data analysis for "20 or more interviews", and, recalling her own experience as a doctoral student, recommends "reasonable restrictions on the number of interviews…as a data management strategy" (pp. 9-10). A review of sample sizes in phenomenographic studies undertaken by doctoral students (for example EARLI SIG 9, 2012), confirmed a typical sample size of around 15-20 respondents per study.

- Volunteers from various community groups responsible for editing their groups' web pages on the GraniteNet community portal
- Community bloggers on the GraniteNet community portal
- Community members who were customers of GraniteNet's Seniors' kiosk service.

Figure 4-1 illustrates the distribution of the 20 respondents in the study's sample represented by small, numbered circles distributed across GraniteNet's three areas of operations in the case study schematic (Sectors A, B and C) according to the particular nature of their involvement. Respondents in the pilot study are identified using the prefix "P" and phase 2 respondents with the prefix "2". Thus, the four respondents who participated in the pilot study are shown in the diagram in the small circles labelled P.1-P.4, whilst the sixteen respondents participating in the second phase of data collection are labelled 2.1-2.16. Respondents performing primary roles across more than one sector of GraniteNet's operations are represented accordingly in each of the relevant sectors of the case study schematic. For example, respondent P1 appears in "project partners", "project drivers and managers" and is also represented on GraniteNet's board of governance, or management committee, whilst respondent P2 is on the board of governance, has a major involvement in administration of the GraniteNet community web portal and is a also Content Editor for at least one community group's webpage on GraniteNet.

Data Sources - GraniteNet Volunteers and Community Portal Users
(n=20) (P1-P4: Pilot; 2.1- 2.16: Phase 2)
- Structured, face-to-face recorded interview transcripts and mind maps
- Questionnaire responses

Regional Context (2006-2013)

GraniteNet Project History (2006-2011)

Stanthorpe Demographics, Economics, Politics (2006 - 2013)

Description - GraniteNet organisation services web portal (2012)

SOUTHERN DOWNS AND DARLING DOWNS SW QLD

TOWN OF STANTHORPE AND SURROUNDING VILLAGES

PROJECT PARTNERS

CLIENTS AND CUSTOMERS

DRIVERS & MANAGERS

BOARD OF GOV.

PROJECTS & SERVICES

TRAINING AND SUPPORT

COMMUNITY WEB PORTAL

WEB ADMIN & TECH

BLOGGERS & COMMUNITY GROUP

CONTENT EDITORS

WEBSITE USERS AND VISITORS

GraniteNet

Data Sources - GraniteNet Artifacts (2011-2013)
- Community web portal design, structure, activity
- Community group webpages and activity
- Analytics data

GraniteNet Case Study Schematic

Figure 4-1   Distribution of 20 respondents in the sample across GraniteNet's three areas of operation in the case study schematic.

Participants targeted for inclusion in the sample were identified with reference to the following characteristics:

- Nature of the *different role(s)* played by participats as members or customers of GraniteNet, volunteers and/or users of the GraniteNet web portal, including differentiating where involvement was primarily or exclusively "on site" at the GraniteNet premises or "virtual" (via the GraniteNet web portal), or a combination of the two. These roles are further differentiated in terms of the following: Board member; computer trainer; other volunteer; technical support; community group website content editor; community blogger; and Seniors kiosk customer.

- *Duration* of participants' *involvement*: These were differentiated into two groups: "current" and "ex/not current" participants, with the "current" participants further identified as being either "new" (involved for less than one year) or "experienced" (involved for more than one year).

- *Age*: This characteristic was further divided into three groups: "youth" under 25 years; "adults" aged between 26 and 44 years; "seniors" aged 55-64 years; and "elders" (65 years and over).

- *Gender*: Male or female (no transgender respondents were identified or sought).

- People identifying as coming from *cultural and linguistically diverse backgrounds,* (CALD) including Aboriginal and Torres Strait Islanders (ATSI).

- People identifying as having a *significant disability or impairment* (PWD).

The sample distribution in terms of these respondent characteristics is presented in tabular format atAppendix I.

The researcher's decision to undertake individual interviews with respondents incorporating artefacts generated by respondents themselves during the interview process in the form of mind maps (Buzan & Buzan, 2005) was informed by recommendations in the literature (Marton, 1988). A decision was also taken to use a respondent questionnaire designed to supplement the interviews by providing demographic and other data relevant to illuminating the research questions. A matrix

mapping the data collection techniques and instruments to the two research questions is provided at Appendix J.

As a prelude to a detailed description of the procedures undertaken for the collection and analysis of data, an overview of the research phases as an emergent design is now presented.

4.3. Overview of the Research Phases as an Emergent Design

Drawing on advice found in the literature on case study research (Stake, 1995; 2005; Stark & Torrance, 2005; Yin, 1989) and phenomenographic research (Akerlind, 2002, 2012; Cope, 2004; Harris, 2011; Sin, 2010) and also on advice provided by supervisors and critical friends, a pilot study was conducted with a small, purposive sample of respondents prior to embarking on the main phase of the study. The specific objective of the pilot study was to test the validity and utility of the conceptual and analytical frameworks, proposed data collection instruments and protocols and data analysis procedures with respect to their fitness for purpose in terms of generating data that could be interpreted to answer the research questions. As a result of this decision, the emergent research design comprised of the following three distinct stages or phases gradually crystallised:

- An initial pilot phase and subsequent structured critical reflection, in which the conceptual and analytical frameworks and their related data collection and analysis instruments and procedures were trialled with a purposive sample of four respondents.
- A second phase during which refined versions of the data collection instruments and procedures were implemented with the full sample, the data analysis procedures further refined and supplementary data collected in the form of GraniteNet artefacts and analytics data reflecting activity on the GraniteNet web portal to contribute to the GraniteNet case study report.
- A third phase during which an interactive, systematic phenomenographic data analysis of all interview data was conducted, validity checks (Akerlind, 2002) undertaken, the phenomenographic outcome space constructed, and the case study report developed based on analysis of

data generated from the respondent questionnaires and GraniteNet artefact analysis.

The emergent, three-phased research structure is illustrated in the flow chart in Figure 4-2.

PHASE 1: Pilot study

Conduct pilot interviews x 4 - test interview instruments and protocols, and respondent questionnaire

Experiment with and trial data analysis procedure and refine conceptual and analytical framework

Conduct critical reflection and discuss with supervisors

Refine interview instruments and protocols

Finalise sample

Structured critical reflection

PHASE 2: Primary data collection phase

Conduct remaining 16 interviews

Collect web portal artefacts and analytics

Organise interview transcriptions

Finalise analytical framwork and data analysis procedure

Critical reflection: -

reflective journal and communicative validity checks

PHASE 3: Primary data analysis phase

Complete phenomenographic analysis of all 20 interview transcripts and mind maps

Devise categories of description and prepare outcome space, incorporating critical reflection

Analyse web portal artefacts and activities and correlate with phenomenographic data

Conduct communicativ e validity checks with supervisors

Figure 4-2   A phased approach to the study incorporating structured critical reflection.

An outline of procedures for recruitment of participants for the study and ensuring its ethical conduct is now presented, followed by details of the data collection procedures, instruments and protocols used in the pilot and subsequent phases of the study. A report of the pilot study (Phase 1 in Figure 4-2) including a summary of changes made as a result of critical reflection is then presented.

4.4. Procedures followed to recruit participants and ensure ethical conduct of the study

University Ethics Clearance to conduct the GraniteNet study was applied for and approved, initially for a six month period, in December 2011 and was subsequently extended for a further six months to enable completion of data collection by December, 2012. A copy of the university ethics approval is provided at Appendix L. It was noted in the ethics application that the research was not of a sensitive nature and posed no significant physical, social or psychological risks to participants, did not involve withholding of any information or deception of any kind, and that no particularly vulnerable individuals or people under the age of 18 years would be approached to participate (University of Southern Queensland, 2011). It was further noted that although the researcher had a long-standing relationship with the organisation by virtue of her involvement in earlier Participatory Action Research, that no conflict of interested existed in relation to the researcher's role and the conduct of the study that was likely to influence the outcomes of the research in a particular direction, providing that ethical considerations in the design and conduct of the research were appropriately addressed. With reference to the university's requirements for the ethical conduct of research involving humans or animals (University of Southern Queensland, 2011), a set of procedures was devised to ensure the ethical conduct of the study as outlined in Table 4-1.

Table 4-1
Formal Research Ethics and Procedures Developed to Guide the Ethical Conduct of the GraniteNet Study

Formal Research Ethics	Procedures developed to guide the ethical conduct of the GraniteNet study
Ensuring no conflict of interest exists in relation to the researcher's role and the conduct of the study	• Researcher strategically positioned as 'peripheral participant' to minimise the possibility of conflict of interest • Extensive consultations undertaken with the GraniteNet Board prior to the conduct of the study
Permissions obtained to conduct the study	• Full and accurate information provided about the purpose and anticipated outcomes of the study for the Board's consideration, including any potential risks posed to the organisation and/or respondents • Written permission obtained from the GraniteNet Board to conduct the study and approach prospective participants
Informed Consent, voluntary participation and withdrawal at any time without repercussions	• Information sheet in Plain English provided to the GraniteNet Board and to all prospective participants prior to follow-up contact to request participation • Information sheet and verbal communications emphasise voluntary participation and ability to withdraw at any time • Informed consent checked again at time of interview
Minimising intrusion and inconvenience	• More vulnerable (elderly clients) not approached by the researcher personally but via known volunteers, with only one follow-up after initial approach • Interviews kept to one hour, single interview only • Length of questionnaire kept to two pages maximum • Respondents offered the option of not having their interview recorded
Protection of organisation's and respondents' privacy and right to confidentiality of personal and other information	• Interviews conducted in private at a location determined by the respondent • Information provided about what the results will be used for and who will have access to them • Identifying information stored separately from data • Data anonymised during data analysis so that individuals cannot be identified in the report of results • No personal information included in reports or publications resulting from the study

Having obtained permission from the GraniteNet Board following the procedures outlined in the university's ethics approval at Appendix L and in Table 4-1, and following the study's aforementioned sampling logic, prospective respondents were directly approached by the researcher[63], either in person at the GraniteNet community technology hub or by email using respondents' GraniteNet email address, and invited to participate in the study. At this point, prospective respondents were provided with information about the nature, purpose and conduct of the study in the form of a plain English information sheet accompanied by a university-approved information sheet and consent form (also at Appendix L). Prospective respondents were asked to consider the information provided and respond to the researcher advising if they consented to participate in the study, and if so, to suggest a preferred date, time and location for the interview. The interviews were designed to take no more than one hour of each respondent's time and were conducted in private and audio-recorded by the researcher, with the interviewees' permission, for later listening and transcription. Audio recordings were checked immediately after each interview and notes made for referencing during data analysis, prior to them being forwarded to a neutral third party for transcription. Respondents were also invited to contact the researcher if they wished to see a copy of their interview transcript.

Ethical considerations also applied to the collection of data in the form of documentation and artefacts to supplement the interviews and contribute to the case description. For example, access to analytics data of activity on the community web portal (via Google Analytics) was provided by the Website Administrator with permission from the GraniteNet Board. Full and free access to other organisational artefacts and documentation for the purposes of compiling the case study report was provided to the researcher by virtue of her long history with the organisation. No significant ethical problems or concerns emerged during or as a result of the conduct of the study, however ethical issues emerging during data collection are discussed in Section 4.6 on limitations of the study. Details of the procedures and instruments used for data collection and analysis are now provided, including the phenomenographic interview protocol, respondent questionnaire and the phenomenographic data analysis procedure.

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[63]   The exception were the Senior's kiosk customers, as discussed in Section 4.6

4.5. Procedures and Instruments for Data Collection and Analysis

4.5.1. Phenomenographic interview and accompanying respondent questionnaire

Individual, in-depth face-to-face interviews were conducted with the 20 respondents in the study's sample, as illustrated in the case study schematic in Figure 4-1, using an interview protocol trialled and refined with the four respondents in the pilot study. Each respondent was also asked to complete a two-page questionnaire prior to the interview. As summarised in the matrix at Appendix J mapping data collection instruments to the research questions, particular questions in each section of the questionnaire were designed to correspond with one or more of the steps in the interview protocol, providing stimulus and points of departure for further examination of conceptions during the interview. These were trialled and refined as part of the pilot study. Respondents were asked to bring their completed questionnaires and consent forms with them to the interview. Questionnaire responses were also used to verify the heterogeneity of the sample and to confirm the nature of GraniteNet-related activities in which respondents were involved. Importantly, questionnaire data also contributed to the characterisation and description of the case of GraniteNet presented at the beginning of Chapter 5, and, where appropriate, to support interpretation of the phenomenographic outcome space reported in Chapters 6 and 7. Draft and revised respondent questionnaires are presented at Appendix M and Appendix N respectively.

As part of providing a full and open account of the research process that the reader can refer to when judging the researcher's interpretation of the data, the interview procedure is now described in detail and its design justified with reference to its alignment with the study's conceptual and analytical frameworks presented in Chapter 3 and also to key considerations for the ensuring quality of the study.

4.5.1.1. *Eight-step phenomenographic interview procedure including respondent questionnaires and mind maps*

The eight-step phenomenographic interview procedure developed for the purposes of discovering respondents' conceptions and experiences of learning in GraniteNet is considered critical to the trustworthiness of the findings and overall credibility of the study. Deviating from the more commonly reported practice in

phenomenographic research of using semi-structured interviews in order to allow for a free exploration of important themes as they emerge during dialogue between the researcher and respondent (Marton, 1994), a more highly-structured interview procedure, as recommended by Cope (2004), was devised to collect data to interrogate the two research questions and their related sub-questions. Each step in the interview protocol was designed to address a particular learning aspect from the study's conceptual framework linked to one or more of the research sub-questions as illustrated in the matrix mapping the research questions to the interview protocol inAppendix J. The draft and revised interview protocols are included at Appendix O and Appendix P respectively.

Specific strategies designed to minimise researcher influence on respondents' articulation during the interview process of their conceptions and ways of experiencing learning is also considered to be critical (Sin, 2010; Cope, 2004) for ensuring the credibility of the findings. The interview was therefore structured into a sequence of steps designed to maximise the opportunity to for the researcher to "discover" (Bruce, 1990, p. 1) respondents' conceptions and experiences with the least possible interference from the interviewer, as recommended by Cope (2004). In particular, the mind-maps (Buzan & Buzan, 2005) completed by respondents at the beginning of the interview made a significant contribution to this aspect of data quality by eliciting significant data from respondents at the beginning of the interview with minimal researcher involvement in the form of questioning, prompting and dialogue.

Secondly, the interview procedure was designed to facilitate the respondents' engagement with both concrete and reflective experiences of learning that would adequately probe both *referential* and *structural* components of their awareness of the learning aspects in the study's conceptual framework, as recommended in the literature (Akerlind, 2002; Edwards & Bruce, 2006; Marton & Booth, 1997). Specifically, constructs of "significance" and "value" (Bruce, 1990, p. 4; Pham, Bruce & Stoodley, 2002) were drawn on to probe referential aspects, whilst Akerlind's (2005) emphasis on the need to use both "what" and "why" questions to adequately probe awareness and Marton and Booth's (1997) questioning techniques for probing awareness of different aspects of interviewees' experiences of a learning event also informed the design of the both the interview protocol and respondent questionnaire. Finally, key

conceptual resources were drawn from the researcher's toolkit as an educator to inform the design and sequencing of steps in the interview process, including Bloom's revised taxonomy (Anderson & Krathwohl, 2001) and critical incident analysis (Stark & Torrance, 2005). The final version of the interview protocol used in Phase 2 of the study at Appendix P is comprised of a structured sequence of eight steps, each of which is explained and justified with reference to the study's research questions and conceptual framework, and also to considerations of quality in phenomenographic interviewing discussed above and in Chapter 3. Minor changes made to the interview protocol and also to the respondent questionnaire—linked to the interview—as a result of the pilot study are also highlighted.

The allocated time for each step in the interview proved to be suitable, and each interview took almost exactly one hour in total to conduct with each respondent. The mind mapping activity conducted at the start of the interview proved to be an ideal strategy for the researcher to tap into the respondents' conceptions and experiences of the phenomena under investigation so as to minimise the researcher's influence on the interviewees' thinking, helping to maximise the authenticity of conceptions reflected in the data gathered. In this way, as also reported by Wheeldon (2010), substantial data were able to be gathered without the researcher having to engage in conversation or dialogue with the respondent and thereby risking leading the interviewee and infecting the data with her own ideas. Respondents' mind maps are included in the presentation of the phenomenographic findings in Chapter 6. Notes were taken by the researcher during the interview on the interview protocol sheet and the mind maps generated by the interviewees were collected by the researcher at the end of the interview for later analysis (and are included in the presentation of the findings of the phenomenographic analysis in Chapter 6). As the credibility of phenomenographic data analysis is highly contested in the literature and represents the substantive data analysis for this study, a full and detailed explanation of the procedures used for phenomenographic analysis is warranted and is presented in the following sections.

4.5.2. Data analysis processes

The data analysis process was by far the most challenging aspect of the study, however on reviewing the literature on phenomenographic research, the researcher found herself, again, to be in good company, with a significant proportion of the literature dedicated to explication and critical analysis of this so-called "black art" (Cope, 2004, p. 7)[64]. In the interests of presenting a full and open account of the research procedures, the data analysis procedures are now reported and justified emphasising researcher reflexivity and interpretive awareness. Informed by the over-arching orientation to data analysis outlined in Chapter 3, the process adopted by the researcher to analyse the data generated by respondents in the phenomenographic interview followed a systematic procedure synthesised from accounts of phenomenographic data analysis in the literature (Akerlind, 2002; 2012; Bruce, 1997, 2006; Cope, 2004; Harris, 2011; Limberg, 2008; Marton, 1988; Marton & Booth, 1997; Sin, 2010; Svensson, 1997). Strategies devised by the researcher to scaffold data analysis included trialling a data analysis procedure with the data generated from the pilot respondent sample, keeping a reflective journal for the duration of the data analysis process and conducting a systematic, critical reflection on completion of the pilot data analysis phase. The reader is again referred to the structured critical reflection on the pilot phase included at Appendix K for specific details. The 10-step phenomenographic data analysis procedure is now outlined.

4.5.2.1. *10-step phenomenographic data analysis procedure*

On completion of the 16 Phase 2 interviews, the researcher commenced the primary data analysis phase (Phase 3), following the 10 step procedure outlined in Table 4-2, building on the refinements to the Phase 1 data analysis process and using the templates created during Phase 2, progressively working towards achieving the stabilised system of meanings referred to in the literature (Marton, 1988; Marton & Booth, 1997). During this time, the researcher continued to collect digital artefacts from the GraniteNet community portal to supplement the case study description and, potentially, to provide supporting evidence to confirm the findings. Significant further

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[64]   See for example, Akerlind (2002, 2012, 2005), Barnard et al. (1999), Bruce (1990), Cope (2004), Harris (2011), Sin (2010) and Svensson (1997).

reading on phenomenographic data analysis was done during this period and further analysis of the pilot data using a data analysis template devised by the researcher was conducted and refined for use in Phase 3 the primary data analysis phase. This resulted, in turn, in some further refinement of the study's holistic conceptual and analytical framework in presented in Chapter 3 and also some refinements to data analysis procedures.

The 10-step systematic data analysis procedure devised and followed by the researcher, both sequentially and iteratively, for phenomenographic analysis of interview data, is presented in Table 4-2. The data analysis template referenced in steps 2 and 3 in the table is provided at Appendix Q and examples of annotated respondent mind maps referenced in step 4 can be viewed in the presentation of findings in Chapter 6.

Table   4-2

10-step Phenomenographic Data Analysis Procedure

Data Analysis Steps	Objective (and important considerations)
1. Initial inspection of interview transcripts	• Identify utterances relevant to the different learning aspects in the conceptual and analytical framework (highlight and colour-code for ease of reference)
2. Further consideration of identified utterances in the context of the whole transcript, focusing on referential component	• Immersion in the "second order perspective": • What does this tell me about the way the respondent sees/experiences the phenomenon in question? • What must the phenomenon mean to the respondent if they are saying this or that? (record in data analysis template)
3. Further inspection of interview transcripts and identified utterances with a focus on structural components	• Identify what is thematised, focal in awareness, and what is unthematised, or in the ground. • How is the phenomenon in question differentiated/delimited from its context? (record in relevant section of data analysis template)
4. Checking and validating interpretations of conceptions against respondents' mind maps	• Review content of each mind map in light of transcript and note the sequence (numbered order) in which each of the associations reflected in the branches of the mind map are mentioned by the respondent (annotate on mind map); note important keywords used by respondents in their description of their mind map branches (annotate on mind map)
5. Working with hard copies of the interview transcripts and with reference to the data analysis templates, physically sort data extracts into "pools of meaning" (Marton, 1988, p. 198) 6. Gradual refinement of a "stabilized system of meanings" into structurally related categories (tentative categories of description)	• Move backwards and forwards between individual transcripts and pools of meaning • Start moving away from a focus on individuals to a focus on conceptions • Start identifying critical differences between conceptions and possible dimensions of variation • Continue iterative process as required
7. Checking (validating) identified categories against individual transcripts	• Do the categories make sense in the context of the individual transcripts?
8. Devising labels and descriptions for each category	• Use metaphors and utterances drawn from the interview transcripts where possible • Labels need to reflect the meaning of the category in terms of the referential component of the conception reflected in the category
9. Construction and refinement of the outcome space in diagrammatic form showing structural relationships among categories of description in terms of expanding awareness of the phenomenon in question	• Review outcome space against Marton & Booth's (1997) criteria: distinctiveness, logical and inclusive relationships and parsimony
10. Mapping conceptions in the outcome space back to the case study sample	• Check that the combination of conceptions of the phenomena reflected in the categories in terms of their occurrence and spread across the respondent sample makes sense.

The five elements of interpretive awareness guiding data analysis were presented at Appendix H. The discovery of conceptions of learning, gradual emergence of categories of description and construction of the study's phenomenographic outcome space following the above 10-step procedure is elaborated in the introduction to the presentation of the findings in Chapter 6. Important considerations informing data analysis in the pilot study and in the third phase (the primary data analysis phase) were also discussed in Chapter 3, with an emphasis on demonstrating the importance of the researcher's attention to interpretive awareness in the data analysis process as part of her commitment to reflexivity.

4.5.2.2. *Analysis of GraniteNet web portal activity and artefacts*

As illustrated in the case study schematic in Figure 4-1, the decision was taken to use the GraniteNet artefacts and analytics data gathered during the period July 2011-July 2013[65] to help describe the case of GraniteNet as a Community Informatics project and to elaborate on the community portal related activities of GraniteNet, providing a context for interpretation of the phenomegraphic findings and to support their "naturalistic generalisation" to comparable contexts (Guba & Lincoln, 1985; Stake, 1995; Stark & Torrence, 2009). GraniteNet artefacts and portal activities subject to content analysis included:

- the GraniteNet web portal design and functionality.
- Google analytics data on website activity during the nominated period.
- screen shots of the home page, community group pages and blog pages illustrating particular activities and features of GraniteNet during the nominated period pertinent to the roles performed by respondents..

Results of the analysis of these artefacts is reported as part of the case study description in Chapter 5.

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[65] This time period was determined based on the utility of the data to contribute to the description of the case and interpretation of the outcome space considering the period during which phenomenographic interviews were conducted was January-December, 2012.

4.5.3. Report of pilot study including critical reflection and subsequent changes to data collection instruments and protocols

Pilot interviews were conducted with four respondents during February to March 2012 following the procedures outlined above and using draft versions of the data collection instruments and protocols—that is, a draft interview procedure and a draft respondent questionnaire. For the purposes of identifying respondents for the pilot study, the principle of heterogeneity was also applied in addition to targeting respondents considered by the researcher to be likely to have more complex understandings of the phenomena in question, thereby potentially generating a richer data set with which to work for an initial phenomenographic data analysis and refinement of the study's conceptual and analytical framework and data analysis procedures prior to undertaking the full scale study.

A two-stage data analysis process was implemented in the pilot study that incorporated Steps 1-3 and 7 from the full 10 step phenomenographic data analysis procedure outlined in Table 4.2 above[66]. In the interests of researcher reflexivity and interpretive awareness, a structured, critical reflection was also undertaken as part of the pilot study to inform refinement of these frameworks, protocols and instruments (refer Appendix K for a report of the critical reflection). Key aspects that were the focus for critical reflection included: validity of interview questions and questionnaire items in terms of generating data to address the stated research questions.

- Utility of data collection instruments in terms of addressing the stated aim, purpose and focus of the study and adhering to the requirements of the chosen methodology.
- Efficacy of strategies used to manage researcher reflexivity and interpretive awareness during interviews and data analysis.

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[66] Note that the data analysis template referenced in the 10 step phenomenographic data analysis procedure in section 4.4.2 was not used in the pilot study as it was devised as part of the critical reflection on the pilot study and implemented in Phases 2 and 3.

The structured critical reflection resulted in identification of issues and crystallisation of insights that proved crucial for the conduct of subsequent phases of the study. These included refinement of the holistic conceptual and analytical framework guiding the study (refer to Figure 3-2 and Figure 3-4) and refinement of the data collection instruments and protocols and also the data analysis procedures (refer to Forward Actions for each area of focus in the tables in the critical reflection at Appendix K). For example, incorporation of additional questions into both the interview protocol and questionnaire enabled the researcher to probe in more detail respondents' conceptions of learning in the Phase 2 interviews. Importantly, critical reflection on interview transcripts and accompanying audio recordings generated insights into deficiencies in the researcher's interview technique that were able to be addressed in the subsequent interviews. Trialling of the analytical framework and data analysis procedures with data generated in the pilot study in the form of interview transcripts and questionnaire responses also enabled refinement of the analysis process into a systematic procedure to incorporate a stronger analysis of respondents' structure of awareness, as recommended by Cope (2004) and Akerlind (2005).

With reference to reports of other phenomenographic studies, a decision was subsequently taken to incorporate the pilot data into the overall data analysis in Phase 3, the primary data analysis phase. This decision was taken on the grounds that the deficiencies in the pilot instruments and protocols identified as a result of the pilot study were related to questions of data sufficiency rather than validity and therefore did not preclude the data generated in the pilot study from being incorporated into the full dataset for further analysis. The researcher also determined that the benefits of the of the structured critical reflection for the quality of the study should be leveraged throughout the second and third phases of the study. She therefore undertook to keep a reflective journal to which she could return frequently during the second and third phases of the study in order to record, reflect on and tease out troubling issues and perplexing questions as well as good ideas, observations and insights.

4.5.4. The "holy grail": A stabilised system of meanings

Data analysis continued in "fits and starts" during 2013 whilst refined drafts of the literature review and methodology chapters were being written. A period of study leave at the beginning of 2014 allowed the researcher to immerse herself fully in the

phenomenographic data analysis process, without which it is doubtful that the task would have been achieved at all. During this time, the researcher returned again and again to the aforementioned researchers' accounts of their data analysis processes in order to gauge her progress as particular challenges and hurdles related to the highly complex nature of the task of analysing the 20 mind maps and interview transcripts were gradually overcome. Critical milestones for the researcher during this phase were coming to clearer understandings of:

- the theorising of conceptions of learning, including the concept of the structure of awareness and the duality and "co-constituativity" of referential and structural components of conceptions, and
- the nature and role of dimensions of variation in identifying conceptions and ways of experiencing the phenomena in question and devising categories of description.

After three months of intensive data analysis work, the "holy grail" of a "stabilised system of meanings" (Cope, 2004, p. 1) was achieved in the form of seven distinctly different and discrete, yet logically related, categories of description of conceptions of learning in GraniteNet. These categories of description constitute the "set of possibilities" (Marton, 1988, p. 189), or possible variations in the way that participants experience learning in GraniteNet and are reported in the presentation of the phenomenographic findings in Chapter 6.

4.6.   Limitations

No significant limitations were identified that are seen to impact on the credibility of the study or its findings. Overall, the researcher is convinced of the defensibility of the research design, the integrity of its implementation, the quality of the study and the trustworthiness of the findings. Nonetheless, the following limitations are acknowledged.

4.6.1. Situated ethics: An ethical moment impacting on the sample

Whilst it is acknowledged that the case study site, and its location, are subject to the influence of political machinations as are all organisations in all social contexts, no substantive political issues emerged during the research process that are considered to have impacted on the trustworthiness of the data or overall credibility of the study. Furthermore, by virtue of her long term relationship with the organisation, the researcher was able to interview two respondents who had been involved in earlier stages of the development of GraniteNet and who, at the time of the study, were operating more at the margins. The fact that the researcher was able to include perspectives from those at the periphery in addition to those at the centre is considered to be a strength of the study, contributing to diversity of perspectives [heterogeneity of the sample] and affording inclusion of less "celebratory accounts" (Groundwater-Smith & Mockler, 2007, p. 205) of GraniteNet and of learning in GraniteNet. Inclusion of perspectives from former leaders and drivers not actively involved at the time of the study also contributed a temporal element to the data, reflecting the changing research context over time and adding a narrative dimension. Where ethical considerations did arise in the data collection phase of the study was with regard to access to prospective respondents, specifically with regard to recruiting customers of GraniteNet's Seniors kiosk[67] in the sample to be interviewed. This "ethical moment" (Usher, as cited in Piper & Simons, 2005, p. 58) in the study is now briefly described.

Mindful of not wanting the research to sabotage the work of the organisation, of the importance of not being intrusive, and that "scholarly intent" and university ethics clearance do not "constitute licence to invade the privacy of others" (Stake, 2005, p. 459), the researcher was particularly cautious about approaching the customers of the Seniors Kiosk to participate in interviews. These older individuals constitute a primary target group of the organisation's digital inclusion activities and have already had to overcome significant barriers in taking steps to access the organisation's facilities and services. Therefore, rather than approaching these customers directly, the researcher

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[67] As part of its community technology services, GraniteNet operates a Seniors Kiosk facility where people over the age of 55 years are provided with subsidised and free access to computers, the internet and digital skills training through a partnership arrangement between the government, private enterprise and community organisations operating in cities, towns and communities across Australia (Australian Government Department of Social Services, 2016).

consulted with and sought the support of two GraniteNet Board members involved in service delivery to determine the least intrusive approach. It was decided that these two individuals would approach Seniors Kiosk customers with whom they had established a good relationship over time, and who they felt would be least likely to be put off by such an approach. Further, they would do so in a way that full and clear information about the study was provided, both verbally and in writing, after which the prospective respondents would be allowed time consider whether or not they wished to participate in the research. The initial request was then to be followed up by the relevant Board member on one occasion only, after which no further request was to be made.

Whilst ethical practice was thus prioritised, the implications for the study were that only four Seniors Kiosk customers were approached to participate in the study, of whom only one agreed to be interviewed, thus potentially impacting on the quality of the study's findings in terms of the heterogeneity of the sample. Happily for the researcher, this was mitigated through good fortune, whereby one of the community group Content Editors agreeing to be interviewed was also a Seniors Kiosk customer. Further, a number of the organisation's volunteers who participated in interviews were seniors themselves, aged 55 years and over, who did not have particularly high levels of digital literacy, confidence or proficiency, and who were, as such, only "one step ahead" of the Seniors Kiosk customers they were helping as part of their roles as GraniteNet volunteers. Thus, the sample is still considered to be adequately diverse for the purposes of the study, and ethical practice was maintained.

4.6.2. Holism, complexity and communicative and pragmatic validity

The first criterion for judging the quality of research is said to be the "advancement of knowledge" (Sin, 2010, p. 307), requiring the researcher to maximise the "communicative validity" (Akerlind, 2002, p. 13) of the findings to ensure the safe "transfer of knowledge from researcher to reader" (Stake, 2005, p. 455). The characteristic of the phenomenographic approach proving to be most problematic for the researcher in terms of communicative validity of the findings is its high degree of complexity. This is related to the holistic nature of the study's conceptual framework, the scope and complexity of the phenomena under investigation and the heterogeneous nature of GraniteNet's hybrid learning and working environments. Also, the

researcher's use of both faces of variation (Pang, 2003) to capture different ways of experiencing GraniteNet, digital technologies and learning in the context of GraniteNet, and to theorise about the nature of these differences, adds further layers of complexity. Indeed, to fully and faithfully present the study's findings in a way that does justice to the extensive and rich dataset generated whilst preserving communicative validity of the results is a daunting task for the researcher that has implications for the "pragmatic validity" (Akerlind, 2012, p. 124) of the findings in terms of their potential for contributing to the "advancement of knowledge" (Sin, 2010, p. 307).

Whilst phenomenography and its theoretical elaboration, variation theory, have proven their fitness for purpose in terms of answering the research questions, generating a rich dataset that will contribute to knowledge about the dynamics and complexity of informal adult learning in Community Informatics, future phenomenographic studies in Community Informatics undertaken by sole researchers would do well to identify a much narrower focus for investigation. That said, this researcher is confident of her study's contribution to knowledge, of which the reader will be the ultimate judge. As stated by Marton and Booth (1997), all that remains now to be done is to communicate the findings to others, who will in turn make a determination about the extent to which they can feasibly be used to inform theory and practice.

4.7.   Conclusion

This chapter presented a report of the research methods and procedures undertaken for the GraniteNet case study as an inquiry into adult's informal community learning in the context of their participation in a local Learning Community and Community Informatics project. A full and transparent account of the study's methodology, including sampling decisions and processes of data collection and analysis across the three phases of the study was presented, and a systematic process of critical reflection undertaken at key points during the study reported. Data collection and analysis processes and procedures were outlined and justified, supported with reference to instruments and exemplars provided at the Appendices. Ethical considerations and implications for the role of the researcher were discussed, with no

significant issues being identified as impacting on the credibility of the study or trustworthiness of the findings.

The chapter concluded with a brief description of the resolution of the data analysis process and an acknowledgment of the study's limitations with reference to the complexity of the phenomenographic data analysis process for a holistic analysis of the three learning aspects in the conceptual framework guiding the research design and consideration of the study's communicative and pragmatic validity. A full and detailed description of case of GraniteNet is now presented to provide the context for interpretation of the phenomenographic findings presented in Chapter 6.

Chapter 5.
<u>The Case of GraniteNet</u>

In associational life, "the centre of consciousness is transferred from our private life to our associate life. Thus through our group activities does neighbourhood life become a preparation for neighbourhood life; thus does it prepare us for the pouring out of strength and strain and effort in the common cause" (Follett, 1998, p. 368).

5.1.   Introduction

GraniteNet was introduced in Chapter 1 as a rural Community Informatics and Learning Community project located in the town of Stanthorpe in South-east Queensland, Australia. In the presentation of the research design in Chapter 3, GraniteNet was conceptualised as a single site, instrumental case study (Stake, 2005) of rural Community Informatics, affording an opportunity to investigate the phenomenon of informal, community learning in the digital era. This chapter now presents the case study report, describing the features characteristics of the case of GraniteNet viewed as "bounded system" (Stake, 2005, p. 444), as illustrated in the case study schematic presented in Chapters 3 and 4. The chapter begins by describing the outer layers of the GraniteNet system—the local, regional and national contexts— emphasising the circumstances and impact of globalisation and technological change on the local community and region, and the associated problem of an enduring rural digital divide. The background to and history of the GraniteNet project is then outlined, followed by an overview of GraniteNet's organisational context, physical and virtual settings, activities and services, participants and communities of interest.

Following this contextualisation, details of GraniteNet's community technology activities and services at the time of data collection for this study during the 2012 calendar year are provided to further support readers' interpretation of the phenomenographic findings, and are presented as the immediate research context. Particular attention is paid to reporting the roles, characteristics and activities of the study's 20 interview respondents as community volunteers, participants in the management and delivery of GraniteNet's services and as users of the GraniteNet community portal. The chapter concludes with an analysis of GraniteNet volunteering

activity at the time of the study as a prelude to presentation of the findings in Chapter 6.

5.2. A Profile of the Rural Community of Stanthorpe in South-east Queensland, Australia

5.2.1. Geographical location, local economy and services and demographic characteristics

The town of Stanthorpe is located on the Granite Belt in South-East Queensland, near the border with the neighbouring State of New South Wales, in the local government area of the Southern Downs Region. Stanthorpe lies approximately 220 km south-west of Queensland's capital city of Brisbane on Australia's east coast and 140 kilometres south of the regional city of Toowoomba on the Darling Downs. At an altitude of around 900 metres above sea level, Stanthorpe enjoys a temperate climate that supports established primary industry including agriculture, horticulture, viticulture, and sheep and cattle grazing. Figure 5-1 shows Stanthorpe's geographic location with reference to its regional, State and national geographical contexts.

Figure 5-1   The town of Stanthorpe showing proximity to Queensland's capital city of Brisbane on the Australian east coast and the New South Wales state border to the south (Australian Small Winemakers Show, 2012).

Stanthorpe and its surrounding district constitutes a local statistical area with a relatively stable resident population of approximately 10,800 people (Australian Bureau of Statistics (ABS), 2013a), roughly one third of whom live in the town with the remainder dispersed throughout the thirteen villages and their surrounding farm properties. The area surrounding Stanthorpe called the Granite Belt covers a geographical area of 2669 square kilometres and is well-known for its unique geological features, such as Bald Rock, the largest granite monolith in the southern hemisphere. Figure 5-2 illustrates Stanthorpe and its surrounding villages, which together comprised the former Shire of Stanthorpe[68].

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[68]   The Shire of Stanthorpe was subsumed into the larger Southern Downs Regional Council (SDRC) as part of the Queensland local government amalgamations in 2008.

Map of the Granite Belt - 'Where they came to'
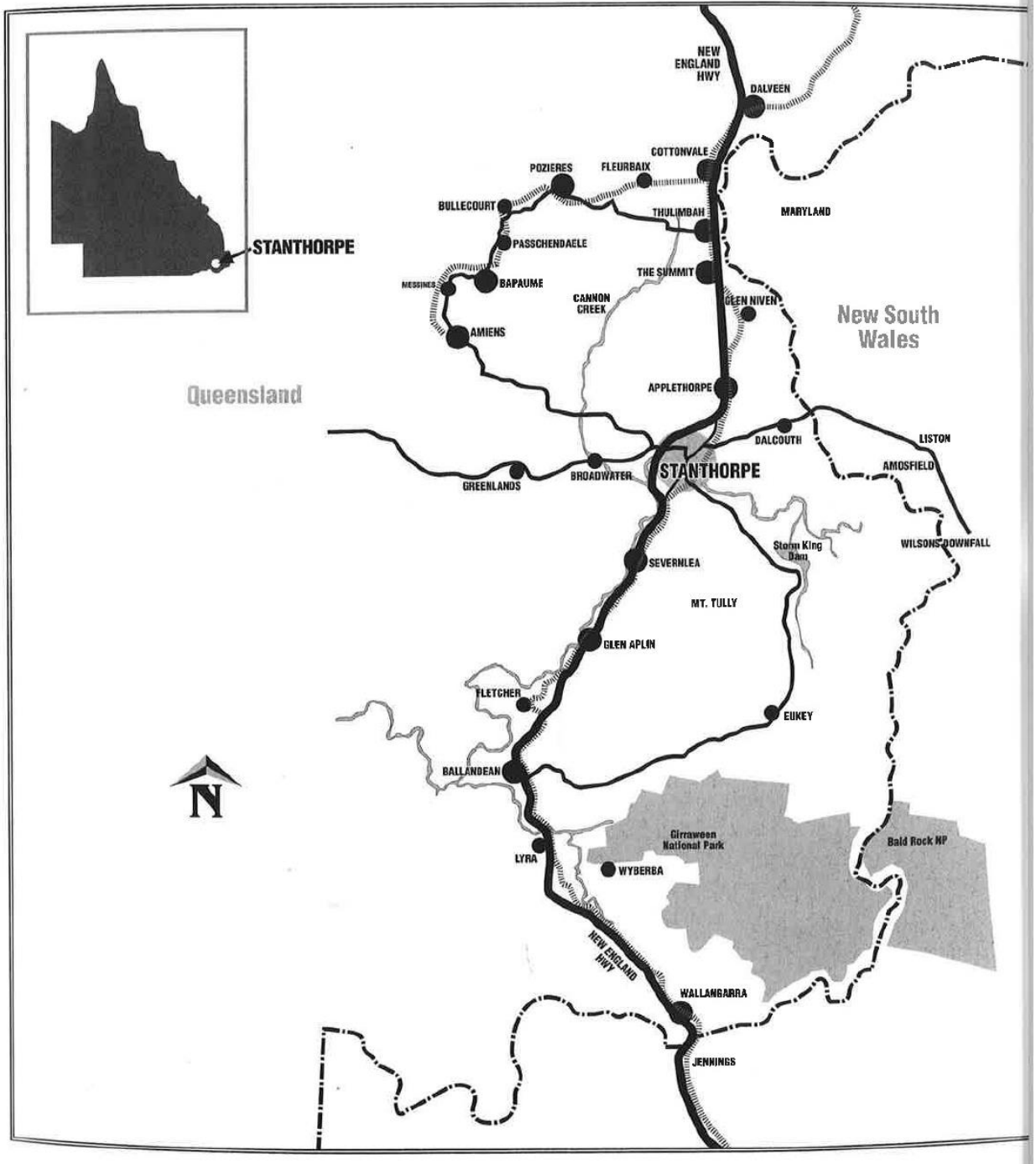
Figure 5-2 Stanthorpe and its surrounding villages on Queensland's Granite Belt (Arcidiacono & Arcidiacono, 2009).

Stanthorpe is described as being well serviced by a range of health, educational, business, cultural and recreational services and facilities in addition to tourist facilities including restaurants, cafes, wineries, hotels and accommodation options (Southern Downs Regional Council (SDRC), 2008a; Queensland Department of Treasury, 2014).

The economy of Stanthorpe is heavily reliant on agriculture and primary industries, with approximately 28% of Stanthorpe's working population employed in the agricultural sector (SDRC, 2008a, p. 33). Stanthorpe is nonetheless reported to have a "relatively higher industry contribution to total GRP"[69] (SDRC, 2008b, p. 3) from wholesale trade, accommodation, cafes and restaurants and education sectors when compared with the rest of rural Queensland, with sectors experiencing high levels of annual growth including wholesale trade, cultural and recreational services, property and business services and health and community services (SDRC 2008b, p. 3). Although the unemployment rate at 4.9% is lower than the national average, there are fewer people in full-time employment and higher numbers working part-time or no longer seeking employment than in the rest of the country (ABS, 2013a).

Consistent with broader demographic trends, Stanthorpe has an ageing population, with the average age of residents at 45 years (compared with 37 years for the national population) and with people over the age of 65 currently representing just under 25% of the town's overall residents (ABS, 2013a). This figure exceeds the national trend and is expected to increase to 30% by 2036 (Queensland Department of Treasury, 2014). Stanthorpe also has a higher proportion of people "with a core activity need for assistance" and a higher proportion of unpaid carers than the rest of Queensland (Cavaye, 2008, p. 41; ABS, 2013a). A marked "youth gap" in the population statistics reported in the "Stanthorpe 2020 Community Plan" (Cavaye, 2008, p. 17) is borne out in statistics from the 2011 census, which show clear deficit in the population of the 16-24 years age group (ABS, 2013a), reflecting the large numbers of young people leaving the area to access further education and employment. A 2004 Community Informatics study in which Stanthorpe was one of two case study sites (Lennie, Hearn & Simpson, 2005) identified concerns among local community members about this youth gap.

Stanthorpe sees itself as a multicultural community, with around 19% of the population born outside of Australia (SDRC, 2008a). Stanthorpe's indigenous population, however, is significantly lower than for the Southern Downs Shire and also the rest of regional Queensland. (ABS, 2013b; ABS, 2013c; ABS, 2013d). Although not as ethnically diverse as the rest of Queensland and Australia (ABS, 2013b),

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[69]   Gross Regional Product.

Stanthorpe has a strong Italian heritage (Arcidiacono & Arcidiacono, 2009), with 30.7% of Stanthorpe's population originating from Italy compared with 2.0% across the whole of Queensland (ABS, 2013a). The most common languages other than English spoken at home are Italian, Croatian and German (Cavaye, 2008). Large numbers of itinerant seasonal workers from Australia and overseas bolster the town's population during the annual harvest season from November through to April, adding to the town's ethnic and cultural diversity and making a significant contribution to the local economy and cultural life of the community (SDRC, 2008a).

5.2.2. Digital information and communications technology infrastructure and use

Typical of smaller, rural communities west of Australia's Great Dividing Range, Stanthorpe reports a low median income, a lower proportion of the population with post-compulsory education qualifications and lower use of ICTs and the internet in comparison with metropolitan and larger coastal centres located on Australia's eastern seaboard (ABS, 2013a; Cavaye, 2008). Among the challenges and opportunities for the Stanthorpe community identified in the "Stanthorpe 2020 Community Plan" (Cavaye, 2008) were enhanced local opportunities for education and training, business development and the development of creative industries and new technology-based businesses, all of which are seen to depend on improved access to fast, reliable internet connections. Increasing access to affordable broadband connectivity was, however, identified in 2008 as a significant barrier to technology take-up in the community (Cavaye, 2008), with the aforementioned Community Informatics study reporting "a lack of public access to the internet" and "a lack of awareness among members of the local business community of the potential opportunities of new C&IT"[70] (Lennie et al., 2005, p. 20). Together, these community characteristics were considered by the architects of the Stanthorpe Learning Community initiative and the GraniteNet project to be risk factors for the community's continued prosperity and longer term economic sustainability (Arden, Cooper, McLachlan & Stebbings, 2008; Arden, McLachlan, & Cooper, 2009).

Despite purporting to have "all the usual telecommunications facilities", with residents able to "choose from" dial up, satellite, broadband, fibre optic cable and

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[70]   Communications and Information Technologies.

wireless internet connections, mobile and broadband internet coverage on the Granite Belt is still regarded as "patchy" and inadequate (SDRC, 2008a, p. 38) as service provision struggles to meet increasing demand for faster and more reliable communications (Alam & Shahiduzzaman, 2013). In 2007/08, just 47.8% of Stanthorpe households had internet access, and 20% had broadband connections, compared with 67% of Australian households with home internet access and 52% of households with broadband connections (ABS, 2011). By the time of the 2011 census, this had increased to 61.6% of Stanthorpe households with an internet connection and 53.5% with broadband connectivity (ABS, 2013a), however this still compares unfavourably with the rest of regional Queensland and Australia (ABS, 2013c; ABS, 2013d). Overall, the 2011 national census data show increasing rates of household internet access (not necessarily high-speed broadband) across rural communities in Australia and an increasing proportion of Australians aged 55 years and over amongst the age groups most likely to use the internet for voluntary community work (ABS, 2011). These statistics reflect a wider trend in advanced capitalist economies such as Australia for increasingly larger numbers of older people to be doing more activities online ((Egan, 2014, April 16; Jones & Fox, 2009). This trend has far-reaching implications for Stanthorpe's ageing population, as discussed in the following section.

5.2.3. Community assets: Social networks, community volunteering and lifelong learning

Notwithstanding such challenges, Stanthorpe has also been characterised as a resilient community owing to its capacity for dealing with the adversity brought about by long periods of drought and economic hardship (Hegney, et al., 2008) and the presence of strong community networks (Buikstra, et al., 2010). A 2008 resilience study (Hegney et al., 2008) found Stanthorpe to be a particularly resilient community, with strong community networks contributing to high levels of social capital[71] , considered by some Community Informatics researchers to be critical for the success

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[71]   Simpson (2005) uses the term social capital to refer to "beneficial outcomes that can be derived from 'multiplying' existing community assets, such as trust, reciprocity and cooperation, shared values and norms, pro-activity and leadership, and a strong sense of community that can result from interaction and participation in strong social networks in a community (see Putnam, 1993; Fukuyama, 1995; Onyx & Bullen, 2000; Woolcock, 2001)" (p. 103). She maintains that "high levels of social capital are usually indicated by community members who feel a strong sense of belonging, a willingness to participate in community activities, and a commitment to actively work towards the future well-being of their community" (p. 103).

of community technology projects such as GraniteNet (Simpson, 2005; Williams & Durrance, 2008). Indeed, Stanthorpe's third sector community organisations number many, and are organised around sporting and other leisure activities, social and cultural interests and community development and support networks (Queensland Treasury, 2014). Of the 13 villages surrounding Stanthorpe, many have their own primary schools, community halls, churches, post offices, rural fire brigades, corner stores, hobby, craft, environmental and horticultural groups and other interest groups, along with a strong sense of local community identity (Arden, 2009). Almost 25% of people aged 15 years or over in Stanthorpe have done voluntary work through a community organisation or group compared with fewer than 20% in the rest of Queensland and Australia (ABS, 2013d), which is consistent with the figures from 2006 census data reported in the "Stanthorpe 2020 Community Plan" (Cavaye, 2008).

Links between Stanthorpe's ageing population, its strong community networks and levels of participation in community volunteering are made in a 2008 Community Profile published by the regional Council (SDRC, 2008a). The document identifies Stanthorpe's high numbers of people aged 50 years and over to be a strength in terms of increased economic opportunities for businesses serving the needs of the ageing population, increased wellbeing through opportunities for participation in "lifestyle activities" and capacity-building through increased numbers of people "available to pass on their knowledge and skills to others" (SDRC 2008a, p. 57). The document also makes reference to statistics showing that overall, regional Australians are "significantly more satisfied with many aspects of their lives than their metropolitan counterparts" (SDRC 2008a, p. 58), with cost of living and lifestyle seen to be positive contributing factors. Moreover, in stark contrast to the population decline being experienced by many smaller rural communities across the country in the last two decades (2000), actual and projected population statistics from 2006 and 2011 census data show a trend of a small, but sustained population growth for Stanthorpe of around 0.5% per annum (ABS, 2013a; Cavaye, 2008).

There has also been a significant increase in the last decade in educational attainment among Stanthorpe's population, with strongest growth in vocational education and training qualifications among local residents (ABS, 2013a). This growth can be attributed in part to national and State Government initiatives to boost the vocational qualifications of the population to address critical skills shortages

(Australian Government Department of Employment, 2014) and partly to initiatives undertaken at a local and regional level in the last decade under the banner of the Learning Community[72] (Cavaye, 2008; SDRC, 2008a)[73]. With reference to lifelong learning opportunities, the "Stanthorpe 2020 Community Plan" (Cavaye, 2008) identified a number of Learning Community assets, including formal early childhood, primary, and secondary school Education facilities, strong links with the regional university in Toowoomba, and community-based learning facilities, networks and activities. Importantly for this study, the plan identified "a preferred future for learning" (Cavaye, 2008, p. 70-71) for Stanthorpe that would extend across formal, informal and non-formal learning opportunities for all age groups, with the Queensland College of Wine Tourism, the Community Learning Centre, GraniteNet and the thriving Stanthorpe branch of the University of the Third Age (U3A) all identified as illustrative examples (SDRC, 2008a).

Overall, the picture painted of Stanthorpe is of a resilient, somewhat parochial rural community, highly dependent on primary production and tourism, with an ageing, relatively culturally homogenous population (albeit with an enduring Italian cultural heritage), thriving education, community service and voluntary sectors, and strong in "community network capacity" (Adams, 2005, p. 11). This rosy picture is tempered by the presence of a number of risk factors. These are related firstly to the long term sustainability of primary industry and local small to medium enterprise in an increasingly volatile global and digital economy. Secondly, there are concerns about the adequacy of physical infrastructure, human resources and capability within the population to make a successful transition to living and working in a digital era and to leverage the opportunities afforded by digital technologies and the internet for

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[72] As reported in a more detailed description of this initiative later in the chapter, Stanthorpe was declared a Learning Community by the then Mayor of the former Stanthorpe Shire Council in 2005.
[73] These initiatives included the establishment by a consortium of government, industry and Education partners of a Learning Precinct providing vocational and higher education opportunities and pathways between senior secondary schooling, technical and vocational education and university that focus in particular on the burgeoning viticulture, wine tourism and hospitality industries. This initiative culminated in the opening of the Queensland College of Wine Tourism in 2007, seen as one of Stanthorpe's most valuable Learning Community assets (Cavaye, 2008; Duke, Garlick & Inman, 2013; SDRC 2008a; QCWT, 2012-2105).

community development. The focus now turns to describing the broader regional and national contexts of the case of GraniteNet as a rural Community Informatics project.

5.2.4. Regional and national contexts: An enduring rural digital divide?

The Southern Downs Shire in which Stanthorpe is located in turn interfaces with the larger regional economic and cultural centre of Toowoomba, the home of Stanthorpe's closest regional university, the University of Southern Queensland (USQ). During the period 2009-2013, The UK-based PASCAL International Observatory PURE[74] Consultative Development Group (CDG) in collaboration with USQ conducted a series of community consultations to explore challenges and opportunities for development of the Toowoomba and Darling Downs region and to advise on the role that could be played by USQ in regional development (Duke, 2014). The consultants found the region to be "caught up in a global phenomenon" of economic and cultural "turbulence" in the "backwash of the global financial crisis" whilst also experiencing the dynamics of the "knock-on effects" (Duke, 2014, pp. 250-251) of a mining and energy boom. An earlier 2012 CDG report had noted "anxiety and discomfort" about the future of the region, the sustainability of its agricultural industry and the associated wellbeing of its diverse communities in the face of difficult economic circumstances, government "short-termism" (Van der Laan, 2014, p. 215) and mining interests.

The future for regional and rural communities in Australia such as Stanthorpe, therefore, remains uncertain, dependent on the capacity of these regions and their towns to maintain population levels, participate in the national and global economy and sustain growth and development (Goggin, 2002). Access to affordable, fast and reliable broadband connectivity and the capability to make effective use of the technology underpin this capacity (Goggin, 2002; Lane, Tiwari, Hume & Greet, 2014). The rollout of the publicly funded National Broadband Network (NBN) to targeted communities across Australia "is expected to improve broadband access to Australian businesses and households, and in doing so, support improved service delivery across areas such as education and health" across the country (ABS, 2011 p. 5). However a

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[74]   PASCAL Universities for Regional Engagement (Pascal International Observatory
www.pascalobservatory.org/)

change of government policy in 2013 cast doubt on the extent to which the promised level of connectivity for households in rural communities such as Stanthorpe would be achieved (Ison, 19 April, 2013). Thus, despite government efforts to promote digital inclusion and build the nation's capacity to participate in the digital economy, the vision of a digitally-enabled future for rural and regional communities in Australia is still somewhat obscured by the spectre of a persistent digital divide (Alam & Shahiduzzaman, 2013; Goggin, 2002; Lane et al., 2014).

At the same time, evidence of positive actions undertaken to address community-identified needs and issues in the form of community-based initiatives and collaborations with the university, regional industry and local government were also highlighted by the PASCAL team (Van der Laan, 2014). In particular, the 2013 PURE report noted a number of community-based development initiatives and collaborative projects that had "gradually coalesced" (PURE, 2013, as cited in Wilson & Hewitt, 2014, p. 54) over a number of years under the leadership of key community members and university academics to become the Community for Community or C4C project. The over-arching aim of the C4C project was to nurture community-engaged university research partnerships to explore community-centred solutions to complex social problems being faced by people in the region, including the problem of the regional digital divide (Burton & Postle, 2014). Enter the GraniteNet Phoenix project, which commenced in 2006 and was subsumed under USQ's C4C umbrella in 2009 as its only non-Toowoomba-based community case study. This brings the focus to the background and historical context of the GraniteNet project.

5.3.   Background to the GraniteNet Project: Historical context

5.3.1. The "GraniteNet Phoenix" project

As one of the USQ "Community for Community" (C4C) foundation projects and community case studies, GraniteNet is described as an innovative, grass-roots approach to using Information and Communications Technologies (Kearns, 2011) to "connect and empower" (Wilson & Hewitt, 2014, p. 53) the Stanthorpe community and promote lifelong learning. As outlined in Chapter 1, the GraniteNet project, initially dubbed "GraniteNet Phoenix", unfolded over a period of four years between 2006 and 2009. Under the joint leadership of the local community development worker

and a small group of Learning Community "champions" and in collaboration with the then Stanthorpe Shire Council, university researchers and the university's then Chief Technology Officer, the GraniteNet project team attempted to maximise the likelihood of success by aiming for high levels of community ownership, participation and engagement and adopting strategies designed to support the development of capacity within the community to learn about and use ICTs effectively (Arden, McLachlan & Cooper, 2010). These strategies included structuring the project as a phased Participatory Action Research and Evaluation (PAR&E) project with a strong focus on community engagement and participatory design approaches recommended in the CI literature (Hearn et al., 2005; Merkel et al., 2004), combined with a focus on strategies to promote individual and community learning. The project phases and timelines are shown in Table 5-1.

Table   5-1
GraniteNet Project Phases (Arden, 2014; McLachlan & Arden, 2009)

Project Phases	PAR&E Processes
Phase I 2006-7 (1st PAR cycle)	Development of project concept and business case for community portal Community engagement and consultation Evaluation of the university-community partnership
Phase 2 2007-8 (2nd PAR cycle)	Design, development and evaluation of pilot GraniteNet community portal environment, governance framework and community engagement strategy Review of Learning Community progress GraniteNet Phase 2 evaluation
Phase 3 2009 (3rd PAR cycle)	Consolidation and focused action to build capacity to address sustainability factors Collaborative, critical review of GraniteNet as a community learning project

Phase 1 of the project focused on development of a concept and business case for the re-development of the earlier Granitenet community web portal (with a lower case 'n'), and culminated in the production of a locally filmed CD showing members of the Stanthorpe community engaged in a range of everyday community activities utilising the community portal. The GraniteNet CD was launched at the 2007 Adult

Learner's Week celebrations (Stanthorpe Border Post, 2007, July 26). The second phase of the project, which was funded by a State Government grant announced in December, 2007 (McNeill, December 14, 2007) focussed on the design, development and trial of an incubator community portal environment, a portal governance framework and community engagement strategy.

Drawing on the findings of the Phase 2 evaluation (Arden, 2009), the focus of Phase 3 of the project was on building capacity and demonstrating longer term sustainability through social enterprise initiatives and the development and enhancement of strategic partnerships. Towards the end of Phase 3, in 2009, GraniteNet entered into an official lease agreement with its former auspice organisation to operate a community technology hub from the wheelchair accessible premises of the former youth centre from the beginning of May, 2010. This boost of physical infrastructure and human resources enabled GraniteNet to provide a "Broadband for Seniors" service, or "Seniors kiosk"[75] and computer recycling, training and support services for the broader community on a daily basis (GraniteNet Newsletter, September 2010). This in turn allowed GraniteNet to grow its volunteer base, develop partnerships with local community groups and organisations, including local government, resulting in a period of growth across all spheres of GraniteNet's operations.

During this period, active use among local community groups of the community web portal began to grow, with up to 90 community groups and organisations listed on the GraniteNet Community Groups page, increasing numbers of which were managing and editing their own GraniteNet web pages. A range of community technology services was being provided from the GraniteNet premises including digital skills training for seniors and people with a disability, vocational placements for long-term unemployed and at risk youth, and work-based and service learning opportunities for tertiary students. Enterprise initiatives included website design and hosting for local businesses, provision of computer skills training for groups and individuals on a fee-for-service basis, sub-letting of meeting rooms and computer facilities to local and visiting community organisations and services and the

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[75]   The Seniors kiosk is part of the Australian Government's Broadband for Seniors program and is subsidised via provision of two desktop computers and reimbursement for associated internet costs (www.bfseniors.com.au).

establishment of a computer recycling service (GraniteNet News, July 2011). Those were halcyon days for GraniteNet.

Although the Phase 3 evaluation concluded that GraniteNet still struggled to reach people in more marginalised sectors of the community, such as people from lower socio-economic and culturally and linguistically diverse backgrounds, it also found evidence of a culture of lifelong learning being built over time as a result of an explicit focus on learning and sustained participation in cycles of PAR&E (McLachlan & Arden, 2009). On reviewing developments between 2009 and 2013, Arden and McLachlan (2014) later found that establishing a welcoming and accessible physical presence in the community in the form of a community technology hub, or "telecentre" (Day, 2010, p. 259) and supporting the development of community leadership capacity through diverse volunteering opportunities at the centre had proved to be critical in increasing participation of more disadvantaged or marginalised people in the community in GraniteNet's activities. These included unemployed youth, people with a disability, itinerant harvest workers and people of Aboriginal and Torres Strait Islander descent. The demographic characteristics of this study's respondent sample, outlined in the following sections, reflect this increased social and cultural diversity among GraniteNet's participants during the period of interest for this study.

Strong organisational governance and leadership saw GraniteNet become an Incorporated Association in its own right in 2010 and, in spite of ongoing concerns about the financial viability of the organisation, GraniteNet remained solvent and sustained high levels of activity and service delivery throughout the period of interest for this study (July 2011-July 2013). However it was not all smooth sailing, with conflict emerging among key project leaders and drivers about proposed changes to the community portal design and about GraniteNet's strategic direction. In particular, there was a view among some of those who had been instrumental in getting the GraniteNet community portal "off the ground" during Phase 2, that the strong focus on establishing the community technology hub and its on-site services had been at the

expense of ongoing development, and consequently the sustainability, of the GraniteNet community portal[76].

Sadly for GraniteNet, the former auspice organisation took a decision in 2013 to resume tenancy of the premises occupied by GraniteNet's community technology centre in order to re-establish a local youth centre. Consequently, GraniteNet relocated to a temporary premises in the town's main street and, unable to meet the high costs of rent for prime CBD premises, subsequently moved to its current location, where it shares a shopfront premises in the main street with a well-established local photography business in an innovative and mutually beneficial private enterprise-social enterprise partnership arrangement.

5.3.2. The design and evolution of the GraniteNet community web portal

The concept model for the GraniteNet community web portal was developed in consultation with community members at a Project Start-up Workshop at the beginning of Phase 2 of the GraniteNet Phoenix project early in 2008 (Arden, 2009). A number of possible configurations and concepts based on participatory scenario-building activities conducted in Phase 1 of the PAR&E project were evaluated and prioritised by the 30 workshop participants. The concept model as it was developed by the project team based on the outcomes of the 2008 community consultation is illustrated in the artefact in Figure 5-3[77] and reflects the decision to focus on three priorities: a Community Noticeboard, a Community Marketplace and a concept called My Learning Space.

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[76]   This story is reflected in the findings of the current study as reported later in this chapter, as the developments in question had occurred during the year prior to the data collection phase of this study in 2012.

[77]   As a GraniteNet project artefact, the concept model diagram was developed at the time by a univeristy student completing a service learning placement with GraniteNet and was labelled "Project Plan". The terms repeated on all three sides of the model represent critical success factors and considerations identified by the workshop participants. This artefact was used in the phenomenographic interviews for this study, as reported in Chapter 4.
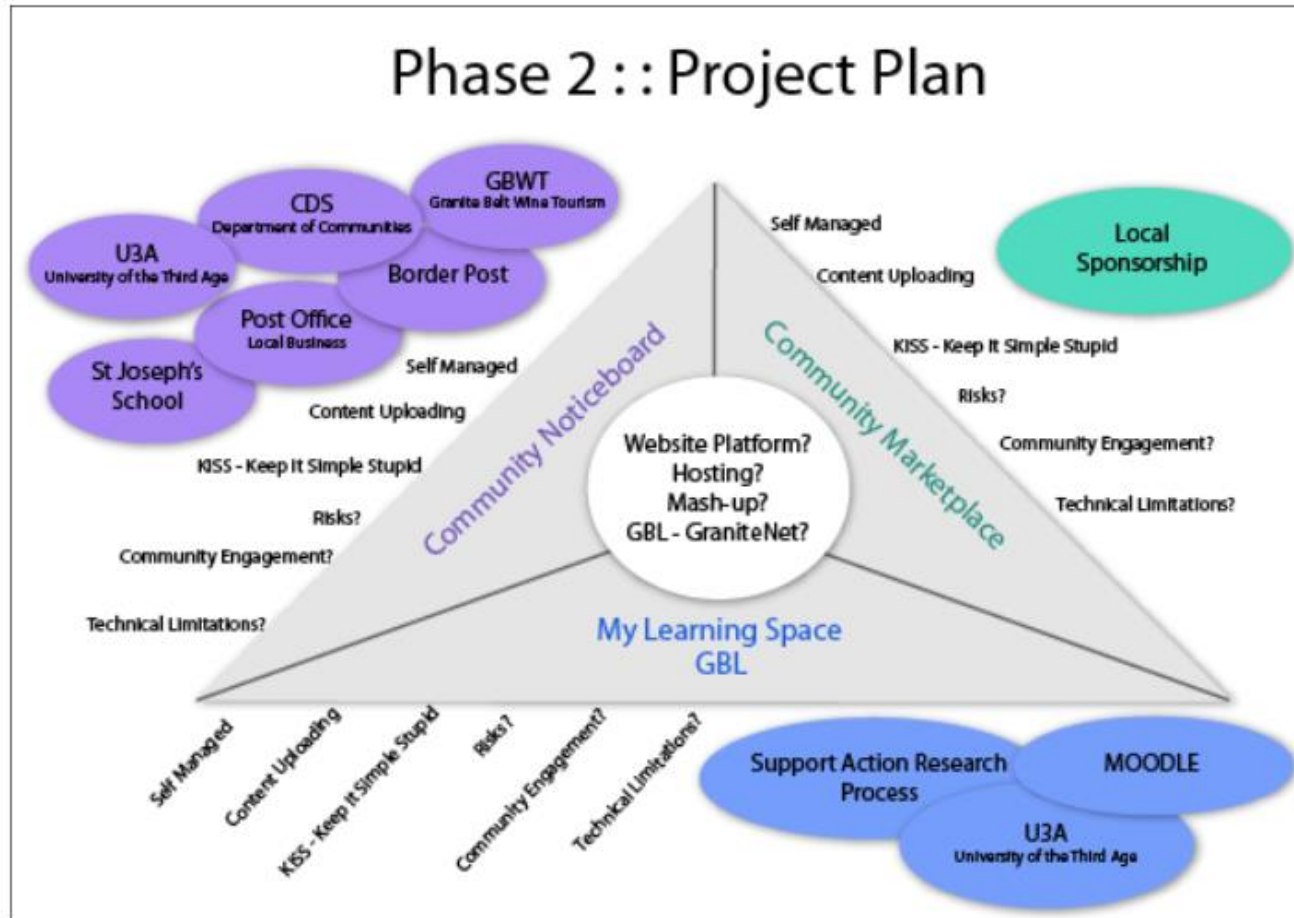
Figure 5-3   GraniteNet community portal concept diagram developed by participants in the Phase 2 Project Start-up Workshop in March 2008 (Arden, 2009).

As a result of decisions reached at this workshop, the Community Noticeboard component, which focused on supporting community networking and information sharing via community group websites and a community forum, was prioritised for initial development. This would be followed in subsequent stages of development by the Community Marketplace, focusing on attracting local businesses, supporting enterprise development and possibly facilitating locally-based e-commerce, and ultimately, realisation of My Learning Space on GraniteNet, aimed at support lifelong learning opportunities. A technical working party was convened by the project steering committee to develop a working prototype or incubator portal environment that would be trialled and evaluated during Phase 2 of the project (as outlined earlier in Table 5-1). The portal design was based on the concept model in Figure 5-3 and composed of a mash-up of freeware and open source software (OSS), including:

- Content management system: ModX (open source);
- Image gallery: Yahoo! Flickr (freeware);
- Wiki: MediaWiki (open source);
- Forum: Simple Machines - SMF 1.1.8 (open source);
- Calendar: WebCalendar(open source);
- Community group @granitenet.com.au email addresses (gmail freeware);
- GraniteNet Newsletter: Mail Chimp (free trial—limited capability);
- Surveys/Training evaluations: Survey Monkey (free trial); and
- Analysis of site traffic and activity: Google Analytics (freeware) (Arden, McLachlan & Cooper, 2010).

The new GraniteNet community portal was launched at a community event at the Wine Tourism College in Stanthorpe in March, 2009. Figure 5-4 shows a screen shot of the GraniteNet home page at the time of the launch.
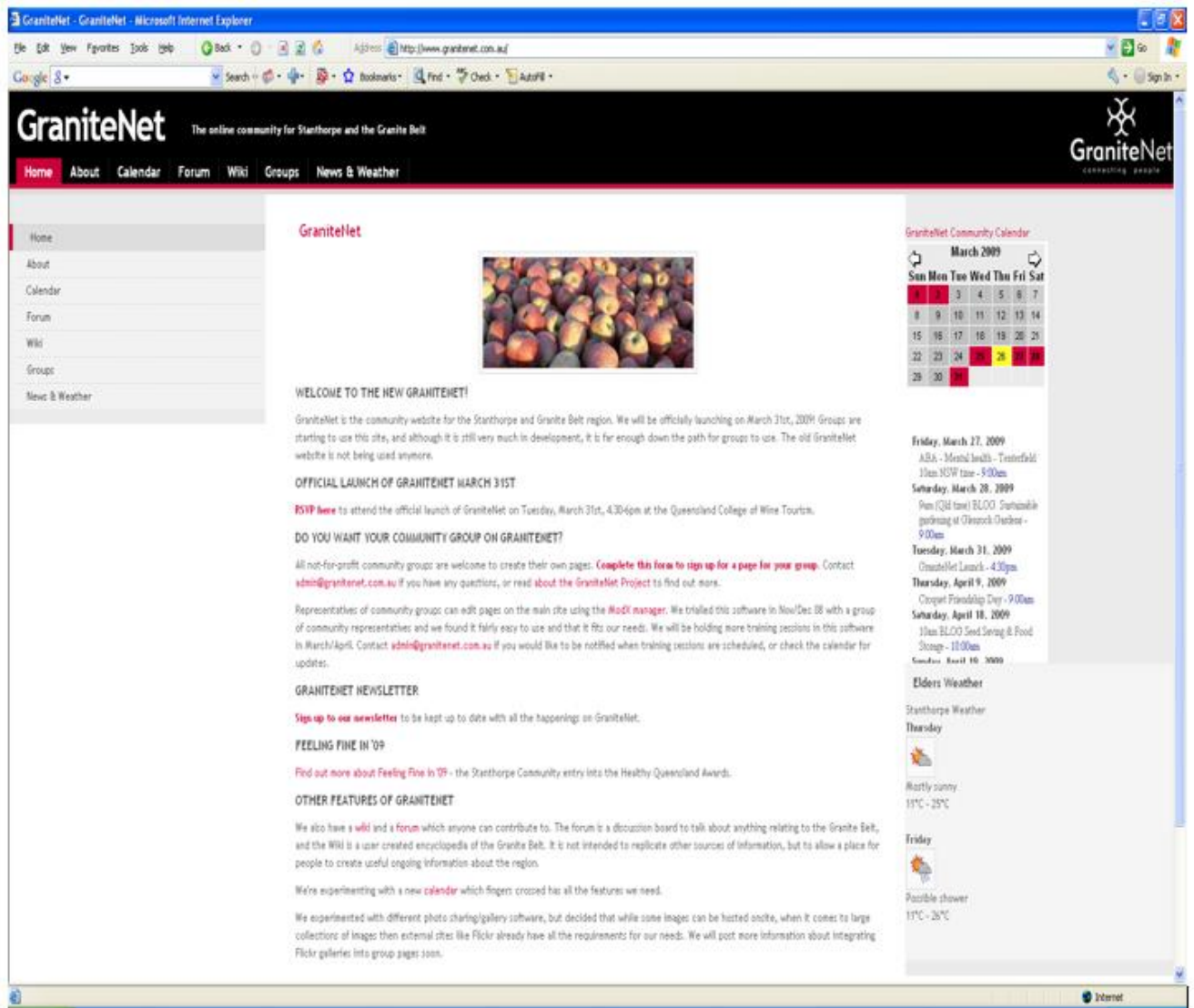
Figure 5-4   A screen shot of the GraniteNet homepage in March 2009 (Arden, 2009, p. 42).

Whilst the basic design of the community portal in terms of its hosting arrangements, software platform, applications and functionality has not changed significantly since its first iteration, it was subject to a makeover during Phase 2 which resulted in a different visual design being created, primarily in the form of a change of logo and colour scheme. The new design, which remains today, is shown in the screen shot of the GraniteNet home page from October 2010 in Figure 5-5. *GraniteNet News* messages on the homepage are regularly updated by GraniteNet volunteers trained to use html and the ModX platform. The *Community Calendar* is updated by community group Content Editors as a more advanced aspect of managing their community group's page on GraniteNet.
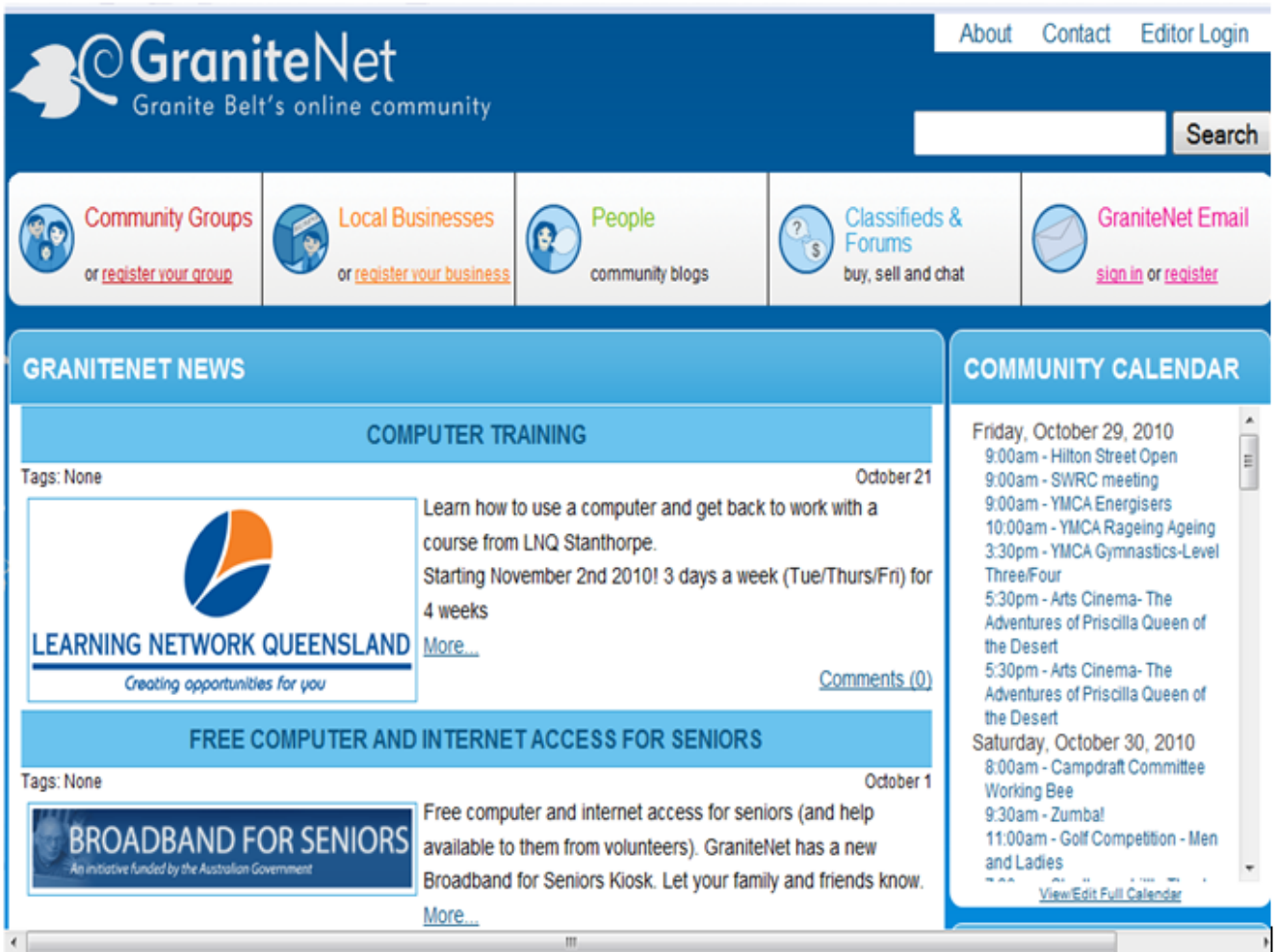
Figure 5-5   The GraniteNet homepage, October 2010.

Feedback from community group Content Editors and other GraniteNet volunteers about the limited functionality of some aspects of the ModX interface led to a decision by the GraniteNet Board in 2013 to convert the portal to a WordPress platform which was seen to have the capacity to provide greater functionality and flexibility for community groups and other users. At the time of writing, this conversion has not been realised and GraniteNet continues to use the original ModX platform with some updates and modifications.

Figure 5-6 shows site traffic on the GraniteNet portal over this six year period from 2009 to 2015. The broad period of interest for this study—July 2011 to July 2013 —and the period during which interviews for this study were conducted—January to December 2012—are both highlighted in the diagram. Noteworthy is the gradual upwards trend in total GraniteNet site activity during the period 2009 to 2013 followed by a gradual downwards trend starting during the second half of 2013 and continuing

through the 2014 calendar year and into the first quarter of 2015 (punctuated by spikes in January of each year related to the annual agricultural show[78] (GraniteNet Google Analytics, March 2015). Significant for this study, the analytics data show site activity plateauing at a sustained high during the 2012 calendar year, during which the empirical data for this study were collected.

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[78]   Analytics data attribute the April 2014 spike in GraniteNet page views to an influx of 'New Visitors' to the Granite Belt Wildlife Carers' *Saving Macropods* page over a period of a few days, which was reportedly associated with a television or radio broadcast promoting the group's website.
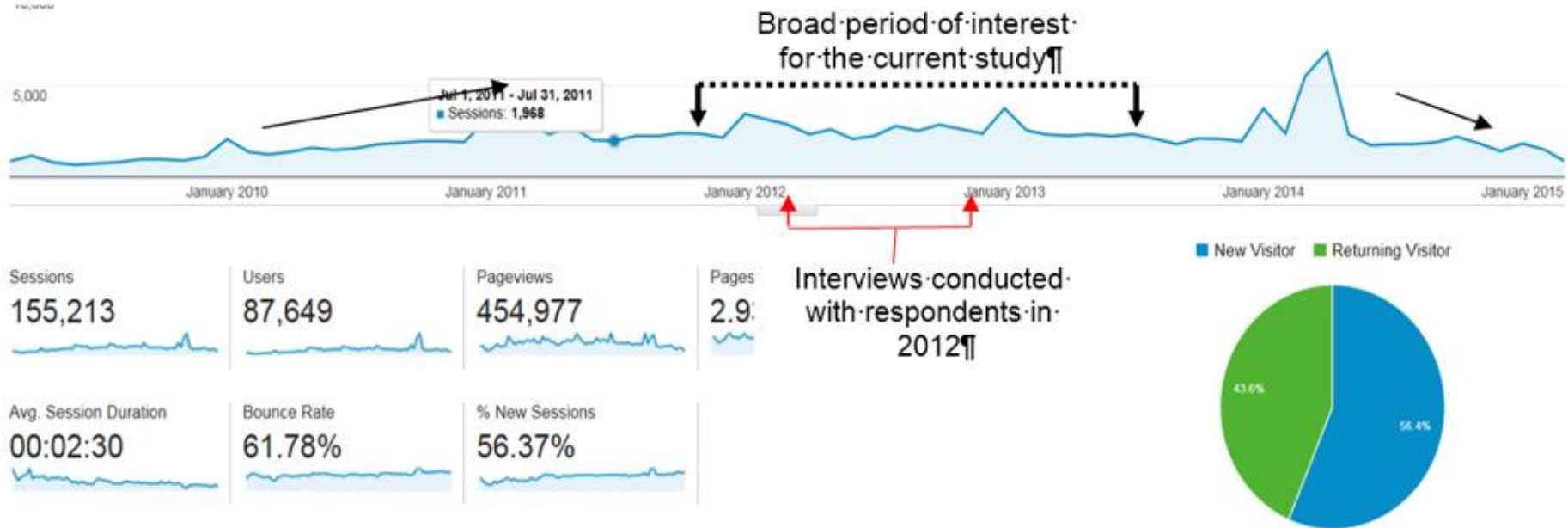
Figure 5-6　　　GraniteNet site traffic March 2009 to March 2015, highlighting the period of interest for the current study (July 2011 to July 2013) and the data collection period (2012 calendar year) (Google Incorporated, 2015).

During the period 2009-2015, a total of 95 local community groups and organisations had a presence on the site (GraniteNet Google Analytics, March 2015). Table 5-2 presents a summary of GraniteNet's complete community group listings over the period of its operations to date, categorised by subject or interest area and listed in order of the highest number of community groups per category included on GraniteNet.

Table 5-2
GraniteNet Community Group Listing, March 2009 to March 2015 (Google Incorporated, 2015)

Groups by Subject	Number of Groups
Sport and Recreation	16
Environment, Gardening, Agriculture & Landcare	15
Cultural and Historical	14
Health	10
Craft and Hobby	7
Community (other)	7
Tourism, Business and Events	5
Women	4
Religious	4
Disabilities	3
Education	3
Seniors	3
Youth	3
Men	1
Total	**95**

5.3.3. GraniteNet today: Ebb and flow

A decade on from the commencement of the GraniteNet Phoenix PAR&E project and six years since completion of the third and final action research cycle in 2010, GraniteNet has continued to evolve as a community-based social enterprise (GraniteNet Incorporated) operated exclusively by volunteers. These volunteers provide a range of digital inclusion facilities and services to residents of Stanthorpe and the Granite Belt, including a community technology hub operating during normal business hours from its shared CBD premises and administration and hosting of the GraniteNet community web portal (www.granitenet.com.au). However, since the period in which data for this study were collected (that is, 2012-13), the scale of

GraniteNet's operations has reduced considerably. Membership of the governance committee has reduced in number and is now comprised exclusively of volunteers involved in day-to-day service delivery and website administration. Community technology services offered still include the Seniors Kiosk and Internet Café, digital skills training, technology trouble-shooting and support services, tax help services, and some computer recycling. Recycled and low-priced computer peripherals and home-made craft items are also sold at the premises to raise money. A review of GraniteNet Google Analytics (Google Incorporated, 2015) data and portal activity on the GraniteNet website since 2013 reveals that site traffic has gradually declined since the period in which this study was conducted. Of the 89 community groups still listed in the GraniteNet Community Groups pages, 23 had updated their pages in the six months prior to December, 2014. There are currently no active community bloggers on the *GraniteNet People* page. Figure 5-7 is a screen shot of the GraniteNet homepage at the beginning of 2016.

Figure 5-7   GraniteNet Homepage February, 2016.

Whilst an analysis of GraniteNet's development and change over time is not the focus of this study, it is noteworthy that the trajectory followed by GraniteNet since its inception in 2006 reflects the ebb and flow of many community technology projects around the globe as reported in the Community Informatics literature. Reviews of Community Informatics projects in Australia and overseas highlight sustainability as a key problem faced by project teams (Gurstein, 2005), evidenced by the plethora of community websites and information technology projects that, after an initial flurry of activity, slowly lose momentum and relevance and become disused relics (for specific examples, see Hearn et al., 2004; Loader & Keeble, 2004; Schauder, Stillman & Johanson, 2004; Warschauer, 2002). That GraniteNet continues to exist as a community-based social enterprise and community web portal almost a decade on from its inception to some extent belies such a fate, however its future remains uncertain.

5.4.   Research Context, Participants and Activities

The time focus shifts to GraniteNet in 2012 as the immediate context for this study and the year in which the empirical data for this investigation into learning were collected. Following presentation of the research context in terms of a brief overview of the nature and extent of GraniteNet's operations and activities in 2012, demographic and other characteristics of the 20 respondents considered significant for interpretation of the study's findings are presented.

5.4.1. Research context: GraniteNet in 2012

5.4.1.1.   *On-site community volunteer activities*

During the 2012 calendar year in which data for this study were collected, GraniteNet was still operating from its premises in the former youth centre on the edge of the CBD, providing a broad range of community technology services to the local community five days a week and hosting and administering the community web portal. Membership of the GraniteNet Board, or Management Committee, comprised seven local community members including representatives from the regional council, local businesses and various community groups. The organisation's operations were supported by a strong governance framework including comprehensive policies and procedures to guide the full scope of its operations and services and an ongoing

partnership with its former auspice organisation that included in-kind support from a community development worker. GraniteNet's own volunteer base extended to approximately 20 active community volunteers at any one time, including the seven management committee members, five of whom were involved in direct service delivery and administration in addition to governance work. The remaining two management committee members represented the local or regional council, GraniteNet's auspice organisation and the local business community. The balance of the volunteer base was composed of various interested community group representatives and people on volunteer and paid work experience placements organised in partnership with government agencies and education providers and brokered by the aforementioned community development worker. In addition to these volunteers involved in on-site activities, approximately 15 community volunteers representing their communities of interest as Content Editors on the GraniteNet community portal were actively involved in GraniteNet during the 2012 calendar year.

Services being delivered by GraniteNet volunteers included hosting and administration of the community web portal; training and support for community group Content Editors; operation of the Seniors kiosk facility; provision of free and low-cost access to computers and the internet and basic computer skills training for local residents; an internet café for the broader community, including visitors and itinerant workers; leasing of meeting rooms and computer training facilities to other community organisations; hosting of volunteer and work placements for government and education providers; a computer recycling service; and fee-for-service web hosting and development. Table   5-3 presents a summary of on-site volunteer activities for the 2012 calendar year[79], painting a picture of vibrant community volunteering activity focused on digital inclusion and involving targeted digital skills training and associated support for both community volunteers and customers alike..

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[79]   As explained in the outline of the study's methodology in Chapter3, systematic researcher observations of on-site activity at the GraniteNet community technology hub was not one of the data collection techniques used for the study, therefore the summary of on-site activities for the 2012 calendar year presented in *Table   5-4*, including estimated numbers of participants involved, is based on the researcher's experiential knowledge (Stake, 2005) of the case supported by her analysis of organisational documents and artefacts.

Table   5-3

Summary of GraniteNet on-site Activities including Estimated Numbers of Participants Community Volunteers and Customers During 2012

GraniteNet on-site activities	Frequency	Estimated numbers of volunteers involved
Board meetings	Monthly	5-7 Board members
Management team meetings	Weekly	2 Board members + up to 2 senior volunteers
Operational meetings	Weekly	2 Board members + up to 4 other volunteers
Volunteer induction, training and development, support	Ongoing, as needed	25-30 new volunteers over the full year
Content Editor Training and Support	Ongoing, as needed	10-15 new and existing Content Editors for the full year
Seniors' Kiosk and other one-on-one computer training	Daily service	Average 10-12 customers per week (new and returning) for the full year 1-2 volunteers per customer
Computer troubleshooting and support	Daily service	Average 6-8 customers per week for the full year, with 1-2 volunteers per customer
Website Administration	Ongoing	2 senior website administrators + up to 6 other volunteers for the year
Computer recycling	Ongoing	1 senior + up to 6 other volunteers for the year
Reception and general admin	Daily	2 senior + up to 6 other volunteers for the year
Group training programs	8 programs in total	4-8 customers per program 1-3 volunteer trainers per program
Fee-for-service web development/hosting	6 jobs in total	1 senior website administrator per job (2 volunteers in total)
Cleaning of premises and equipment	Daily and weekly schedule	2-4 volunteers
Marketing/ business development/community engagement/partnerships	Ongoing	2-4 volunteers
Grant submissions and reporting	Ongoing	2 volunteers

It should be noted that although approximately 20 new volunteers were inducted during the 2012 calendar year, there is a high turnover rate as volunteers come and go for a variety of reasons including gaining employment, completing their volunteer placement period linked to a labour market program, moving on to other community volunteering activities, relocating, family commitments and health-related factors. This means that, whilst there is a core of volunteers who have a longer-term

involvement in leading the organisation's activities, the involvement of many volunteers is episodic and often short-lived. The increasingly episodic nature of community volunteer work is thematised in the Canadian literature (see for example, Schugurensky et al., 2010; Duguid et al., 2013). The focus now moves to analysis of activity on the GraniteNet community web portal.

5.4.1.2. *Activity on the GraniteNet community portal: Community group Content Editors and Bloggers*

For the purposes of the case study, GraniteNet's broad community of interest is viewed as extending beyond volunteers involved in management and delivery of on-site services and community members accessing those services to include its broader customer base of local community groups and organisations registered with GraniteNet and listed on the Community Groups pages, their community group Content Editors, and other individuals accessing and using the community web portal for their own purposes.

As explained in the previous historical background in Section 4.3 and as illustrated in Figure 5-6, despite the steady decline in activity on the GraniteNet community portal since data collection in 2012, site activity levels were at their peak during the period of interest for this study (July 2011 through July 2013). The top performing community groups and blogs, measured by the total number of page views for the period July 2011 to July 2013, are listed in *Table   5-4*. Of these, a total of 13 of the 31 most active community groups and two of the four community bloggers are represented in the study via interviews conducted with their Content Editors or with community bloggers. This means that almost half of the most active community groups and bloggers on the GraniteNet portal during the period 2012-2013 are represented in the study's sample. Other top performing pages during this period were the GraniteNet home page, the Community Groups and People (bloggers) home pages, the GraniteNet Content Editor home page, the Business page, the Jobs page, the GraniteNet Contact details page and the GraniteNet Newsletter archives (Google Analytics, March 2015). With the exception of the Business and Jobs pages, these constitute the pages that community group Content Editors and GraniteNet Website Administrators access in order to complete their work for GraniteNet.

Table 5-4 Community Group pages and Community Blogs (Page Views) for the Period July 2011 to July 2013 in order of Most Active to Least Active, Showing Groups Represented in the Study (GraniteNet Google Analytics, March 2015 Google Incorporated, 2015)

Active GraniteNet Community Groups/Blogs (2011-2013)	Represented in the study
Stanthorpe Agricultural Society	✗
People (combined community blogs x 4 individual bloggers)	✓ (2)
Stanthorpe Camera Club	✓
Granite Belt Wildlife Carers	✓
Stanthorpe Contract Bridge Club	✗
Border Landcare Organic Group	✗
Rare Wildflower Consortium	✗
Stanthorpe Museum/Stanthorpe and District Historical Society	✗
Community Development Services	✓
Granite Belt Support Services	✗
University of the Third Age Granite Belt	✓
Indigenous Community	✓
Stanthorpe Little Theatre	✗
Stanthorpe Field Naturalists	✓
Stanthorpe Borderline Arts	✗
Stanthorpe Regional Art Gallery	✓
Liston Hall Committee	✓
Stanthorpe Campdraft	✗
Stanthorpe Specialist Employment Service	✓
Southern Queensland Institute of TAFE	✗
Stanthorpe Sports & Country Club	✗
Stanthorpe and District Tennis Association	✗
Class of '61 Reunion	✗
Stanthorpe Football Association	✗
Anglican Parish of Stanthorpe	✗
Stanthorpe Cycle Group	✓
Borderline Regional Artists	✓
Stanthorpe Landcare	✗
Stanthorpe Vineyard Christian Church	✗
Stanthorpe Toastmasters	✓
Stanthorpe Branch, Queensland Country Women's Association	✗
Stanthorpe Community Garden	✓
Totals: 31 Community Groups + 4 Community Blogs	**13 Community Groups + 2 Community Bloggers**

As shown in *Table 5-4*, diverse community groups represented in the study's sample include community arts groups, groups focused on hobbies such as cycling, photography, gardening, wildlife and the environment, community support and development groups, groups focused on community places and infrastructure and two explicitly lifelong-learning-focused groups (University of the Third Age and Toastmasters).

5.4.2. Research participants

As outlined in the report of research methods and procedures in Chapter 4, participants for this study were recruited during 2012 from among GraniteNet broader volunteer and customer base across each of its three sectors of operation illustrated in the case study schematic in Figure 3-3 (Governance and management of GraniteNet Inc.; delivery of GraniteNet community technology hub projects and services; and administration and/or use of the GraniteNet community web portal). Demographic and other characteristics of respondents are now presented and their implications for the heterogeneity of the sample briefly considered.

5.4.2.1. *Participant characteristics*

Characteristics of the 20 respondents derived from analysis of their questionnaire[80] responses are presented in Figures 5.8-5.13 on the following pages. A detailed breakdown of the respondent characteristics across the sample was provided at Appendix I and is summarised in Figure 5-8. As shown in Figure 5-8, respondents were aged between 25 and 75 years, with 10 respondents in the over 55 "Seniors" age-group (four of whom are in the over 65 "Elder" age cohort), almost one third (seven) in the 26-54 years "Adult" age-group and three "Youth" under 25 years of age. As such, a diversity of ages is represented in the study's sample. At a ratio of 13:7, there are almost twice as many females as males represented in the sample. Considering the widely-reported over-representation of women in comparable civil society community volunteering activities in both urban and rural Australian communities, which can make it difficult for researchers to obtain the perspectives of male volunteers in these settings (Baum, et al., 2000; Golding 2005; Volunteering Australia, 2008), the gender

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[80]   Details of the questionnaire are provided in Chapter 4.

diversity of the sample is considered to be satisfactory[81]. Three respondents reported being from culturally and linguistically diverse backgrounds (including two people of Aboriginal and Torres Strait Islander descent) and two respondents reported having a significant disability. This representation in the respondent sample of individuals from what could be called more disadvantaged or marginalised sectors of the community is positive in terms of the heterogeneity of the sample.
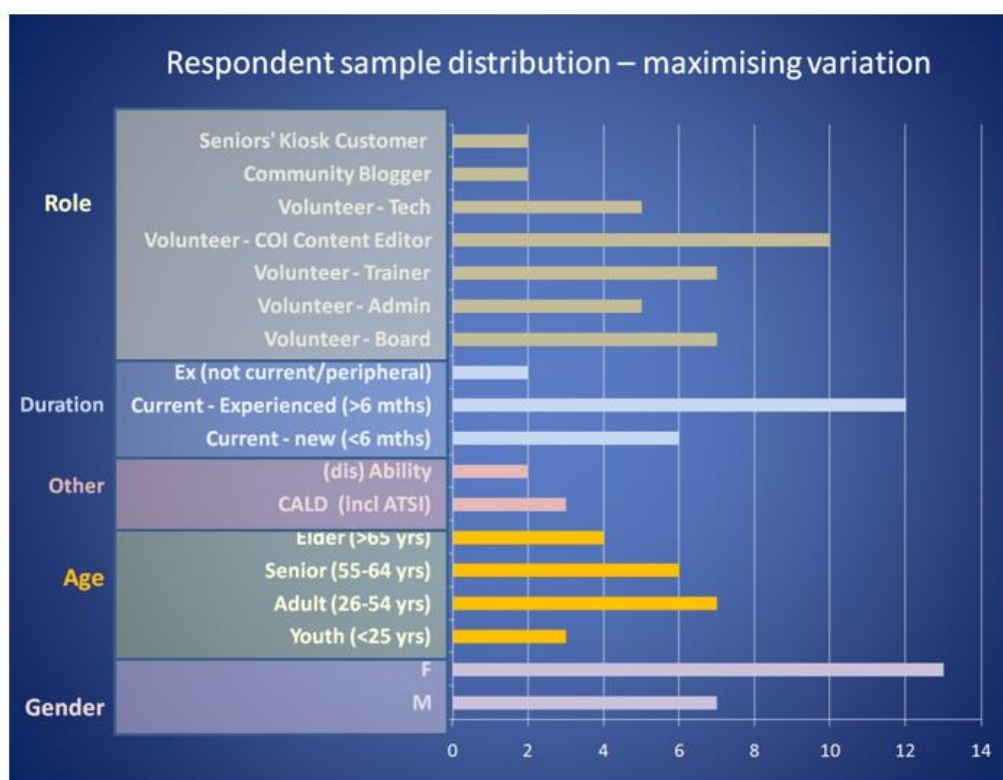
Figure 5-8   Participant characteristics.

Also shown in Figure 5-8, roles performed by respondents included GraniteNet Board (or management committee) member, general administration, trainer, technical support/web administration (volunteer-tech), community group Content Editor,

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81   Studies of volunteers' participation in civic activity in both rural and urban areas in Australia consistently report more female than male community members volunteering in community groups and organisations, with the exception of social and sporting clubs in urban areas and volunteering related to sports and emergency services in rural areas (Baum, et al., 2000; Golding, 2005). A 2008 national survey of Australian community volunteers reported a female to male ratio of approximately 60:40 among respondents (Volunteering Australia, 2008).

Community Blogger, and Seniors Kiosk customer, with 15 of the 20 respondents performing more than one primary role.

Figure 5-9 is a graphical representation of the study's 20 respondents showing their membership of a particular respondent set that reflects the nature of their GraniteNet role in terms of participation in delivery and/or use of GraniteNet's community technology activities and services based on their responses to the participant questionnaire (referAppendix N). Set A, with three members, represents those volunteers whose sole or primary involvement was related to the governance, management and administration of the organisation and/or delivery of on-site community technology services with no direct involvement in administration or use of the GraniteNet community web portal. Five respondents (Set B) had no involvement in on-site activities at the GraniteNet premises, and were therefore involved exclusively as Content Editors for their community group's web page on GraniteNet and/or as Community Bloggers. Set C (with 10 members) includes respondents whose role combined both management and/or delivery of on-site services with editing of either the GraniteNet website or community group web pages (Content Editors). Set D includes the two Seniors Kiosk customers, one of whom was also a volunteer community group Content Editor (and who is therefore also identified as belonging to Set E). As in the case study schematic in Figure 4-1, the numbering of respondents in the sample identifies respondents in the pilot study with the prefix P followed by their allocated number based on the order in which the interviews were conducted (for example, P.1 = the first of the four interviews in the pilot study). Respondents interviewed in Phase 2 have the number 2 as a prefix (for example, 2.16 was the last respondent interviewed).
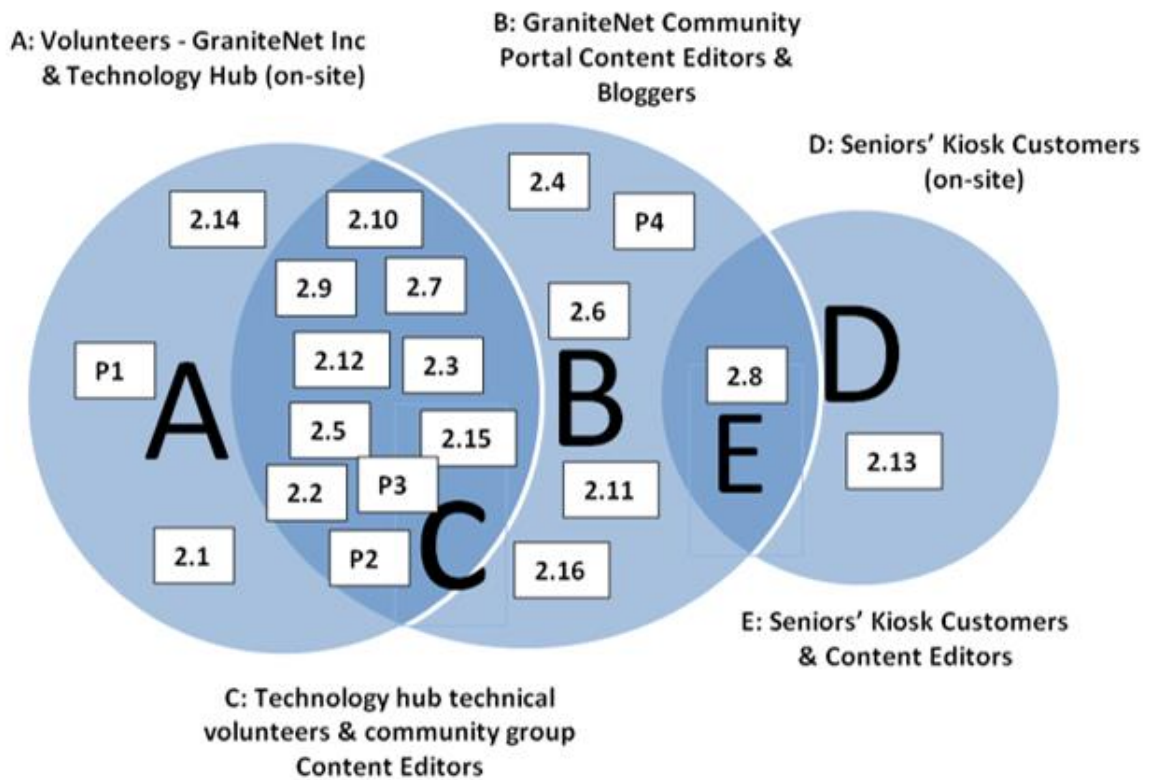
Figure 5-9   Respondent sets in the interview sample.

Analysis of responses to the various items in the questionnaires completed by respondents shows 15 of the 20 respondents to be involved in the management and delivery of services at the community technology hub premises, or as a user or recipient of those services (Sets A, C, D and E). Most of these (11 respondents) were also involved in activities related to editing of the GraniteNet web page and/or community group web pages and were therefore involved in both physical and virtual aspects of GraniteNet's operations (Sets C and E). Sixteen of the 20 respondents were involved in some way in volunteering activity related to the community web portal, either as technical volunteers on site assisting with website administration and support or as community group Content Editors and/or Community Bloggers on the GraniteNet portal (Sets B, C and E), representing the largest respondent group in the sample. These characteristics of the respondent sample in terms of their involvement in both GraniteNet's physical, on-site activities and activity related to the community portal contribute to the representativeness of the sample with respect to volunteers in these two areas of GraniteNet's operations.

In terms of the duration and currency of respondents' involvement in GraniteNet, eighteen respondents were current GraniteNet participants, of whom 12 had been involved for more than six months at the time of the study (identified as "experienced" GraniteNet volunteers in the Table at Appendix I) and six for less than six months (identified as "new"). Two respondents were not actively involved in GraniteNet activity at the time of the study (identified as "Ex/not current/peripheral") but had been actively involved as project drivers and/or web administrators during the period of interest prior to data collection in 2012 and were still involved in community volunteering activities with peripheral links to GraniteNet. Thus, the data presented in Figures 5.8 and 5.9 illustrate the heterogeneity of the sample in terms of both the nature and duration of respondents' involvement in GraniteNet and also respondents' demographic characteristics. Further analysis of participant characteristics with respect to the nature and level of their GraniteNet-related volunteering is included in the discussion in Section 5.4.2.5.

5.4.2.2.   *Employment status and annual income*

In their pre-interview questionnaires, respondents were presented with a list of employment status categories and asked to tick all that applied to them at the time of completing the questionnaire. Respondents were also given an "Other" category, which they were asked to specify. Figure 5-10 shows respondents' employment status and annual income.
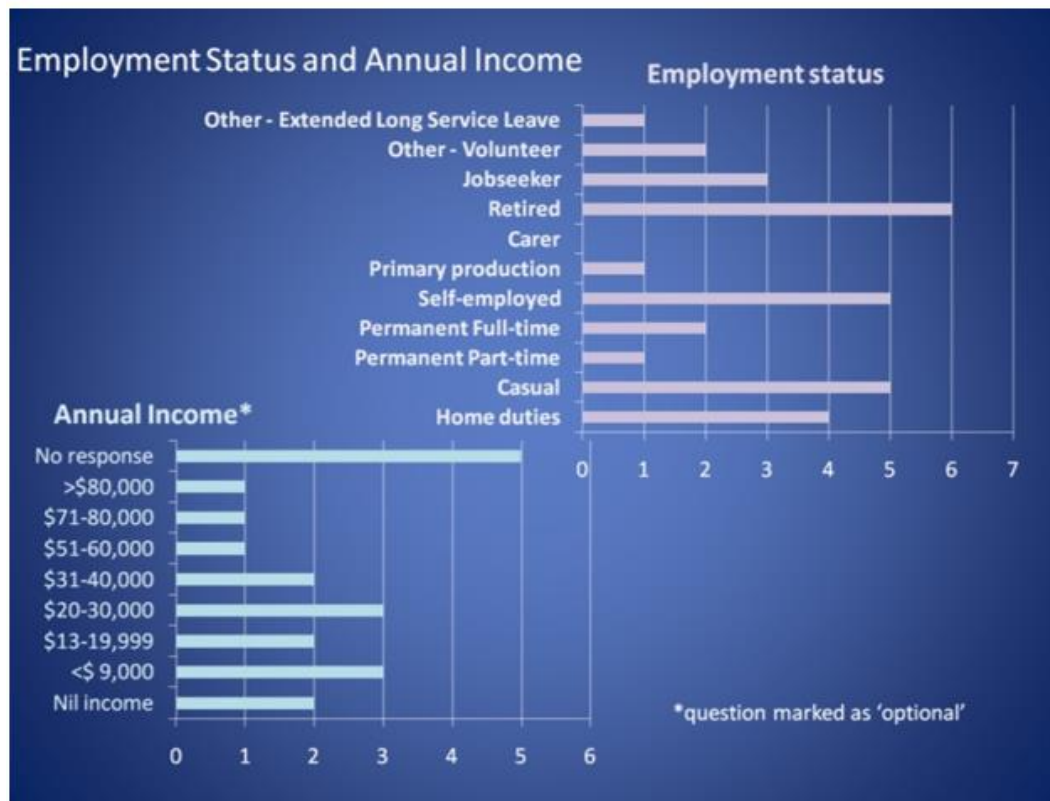
Figure 5-10   Respondents' employment status and annual income.

The most frequently reported employment status categories were Retirement, Self-employment and Casual Employment, with five respondents reporting a combination of two or more types of (paid and/or unpaid) employment. Two respondents were in permanent, full time employment, three identified themselves as being jobseekers, one as a primary producer and no respondents identified as a "Carer"[82]. Although 19 of the 20 respondents were volunteering at the time of the study, only two explicitly identified themselves as a "volunteer" specified in the Other category. Home Duties and Volunteer, as forms of unpaid employment, were identified by six respondents. A question about respondents' level of Annual Income had been tagged as "optional" on ethical grounds, as it was considered by the researcher, herself a resident of the local community, to be potentially intrusive. Consequently, only 15 of the 20 respondents reported details of their annual income. Reported annual income ranged between greater than $80,000 per annum and zero, but was clustered at the lower end of the scale, with 10 of the 15 respondents answering this question reporting

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[82]   For the purposes of the study, a Carer is defined as a person (family member, partner, friend or neighbour) who freely and willingly provides regular and ongoing care and assistance to a dependent person, without payment (Australian Government Department of Social Services, January 2015).

earning $30,000 or less per year. These respondent characteristics reflect a high level of diversity with respect to their employment status and annual income and also broadly reflect the predominant demographic characteristics of the community as discussed in Section 5.2.

5.4.2.3. *Education qualifications and participation in formal education and informal lifelong learning*

Respondents were asked to provide details of their formal education qualifications and their participation in both formal education and informal, lifelong learning. Asked about their highest level of formal education, four respondents reported completing Year 10 or lower, one respondent, Year 11 and five respondents, Year 12. Four respondents reported having vocational qualifications at Certificate Level II or III on the Australian Qualifications Framework (AQF 2013) and six reported holding a university qualification. The high representation of tertiary-qualified respondents among the sample is indicative of a broader trend reported in the literature on the educational qualifications of community members actively participating in civil society associational life (Arden, Cooper & McLachlan, 2007; Faris, 2005) and in Learning Community initiatives in particular (Arden, McLachlan, Cooper & Stebbings, 2008; McLachlan & Arden, 2009; Schreiber-Barsch, 2009). Having said this, the sample reflects strong diversity insofar as six of the 20 respondents had not completed a senior school certificate qualification (Year 12)
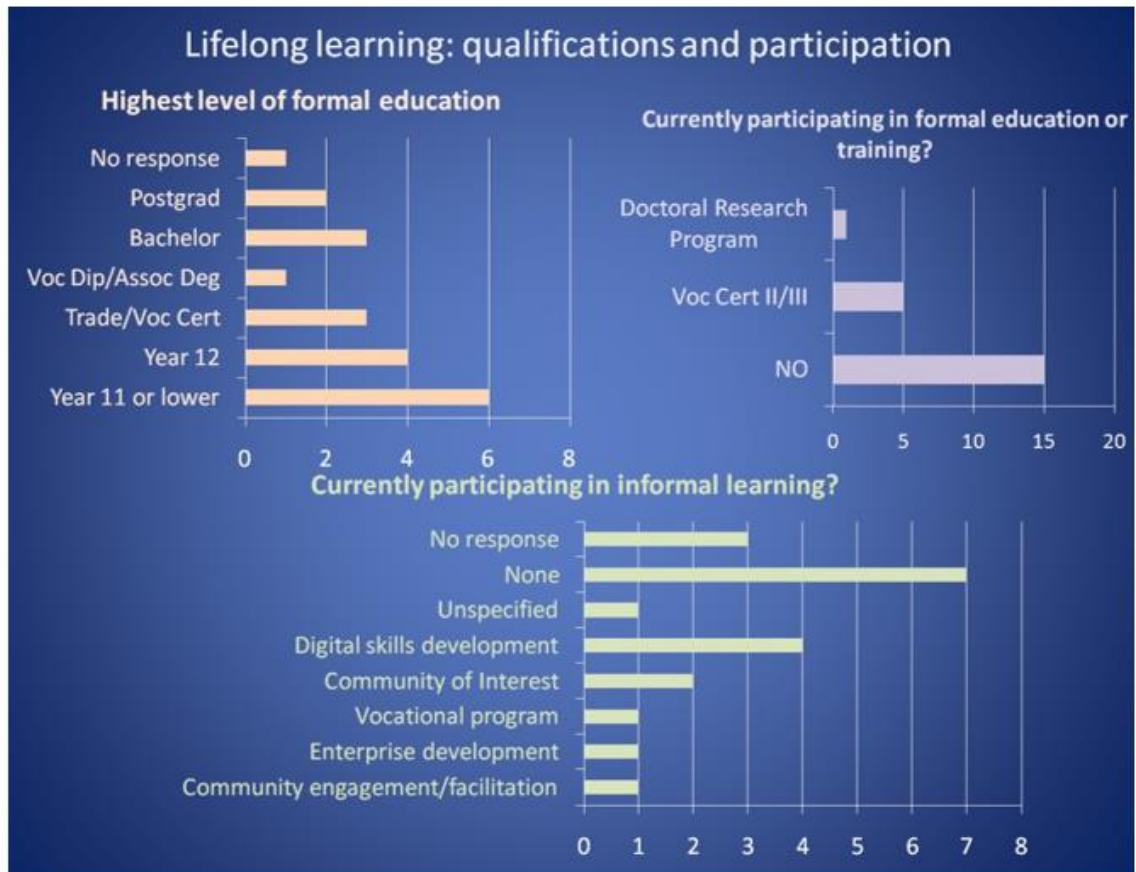
Figure 5-11   Respondents' education qualifications and participation in informal lifelong learning.

With respect to respondents' participation in various forms of formal and informal learning, fifteen respondents reported not currently undertaking any formal education or training at the time of the study, whilst four reported participating in vocational education and training at Certificate levels I, II or III in the AQF (AQF, 2013). One respondent was completing Doctoral studies. The proportion of respondents reporting completing vocational qualifications at the time of the study is reflected strongly in the phenomenographic findings, as detailed in Chapter 6. Seven respondents reported not currently participating in any informal learning activities, whilst four reported participating in informal learning related to digital skills development. Other informal learning activities reported by respondents included learning related to their particular community group or groups, enterprise development, vocational and professional learning, learning related to community engagement and unspecified learning. Three respondents did not answer the

question[83]. The overall response to the question about participation in informal learning activities is reflective of the issues reported in the literature on informal learning in volunteer work and associational life with respect to the difficulties involved in uncovering the "iceberg" of informal learning through research (as discussed in Chapter 2).

5.4.2.4. *Home internet access and personal use of computers and other digital devices*

Details of respondents' home internet access and personal use of computers and other digital devices are provided in Figure 5-12. All except one of the respondents reported having home access to a computer, with 14 respondents reporting having two or more working computers at home. Desktop personal computers (PCs) and mobile phones were the most commonly used technologies among respondents, with 17 respondents using desktop PCs and 14 using a mobile phone. Seven respondents were using laptop computers, two were using iPads or tablet PCs and one was using an e-Reader. With reference to internet connectivity and home computer access, 16 of the 20 respondents reported having broadband internet access, the most common of which was wireless broadband. Two respondents had satellite internet connections, one had no home internet connection and one did not specify.

When asked about the frequency of their computer use, all but two reported daily use of computers, with just over half reporting "more than once daily" and six reporting using computers "much/most of the day". Two respondents reported using computers "every couple of days". The most frequently reported uses of respondents' home personal computers were for personal communication, recreation purposes, and general information. Fourteen respondents reported using computers for formal education and/or informal learning activities and 12 respondents reported using computers for their own community voluntary work. Use of computers related to business and paid employment was reported by six respondents. Respondents using mobile digital technologies were using them primarily for personal communication

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[83]   As explained in Chapter 4, particular challenges related to respondents' interpretation of questions about informal learning identified in the literature and confirmed in the pilot study were addressed by using this question as a stimulus for further investigation with respondents in the individual interviews.

(texting, phone calls, emails), internet searching, photo/image-sharing, listening to music and playing games.
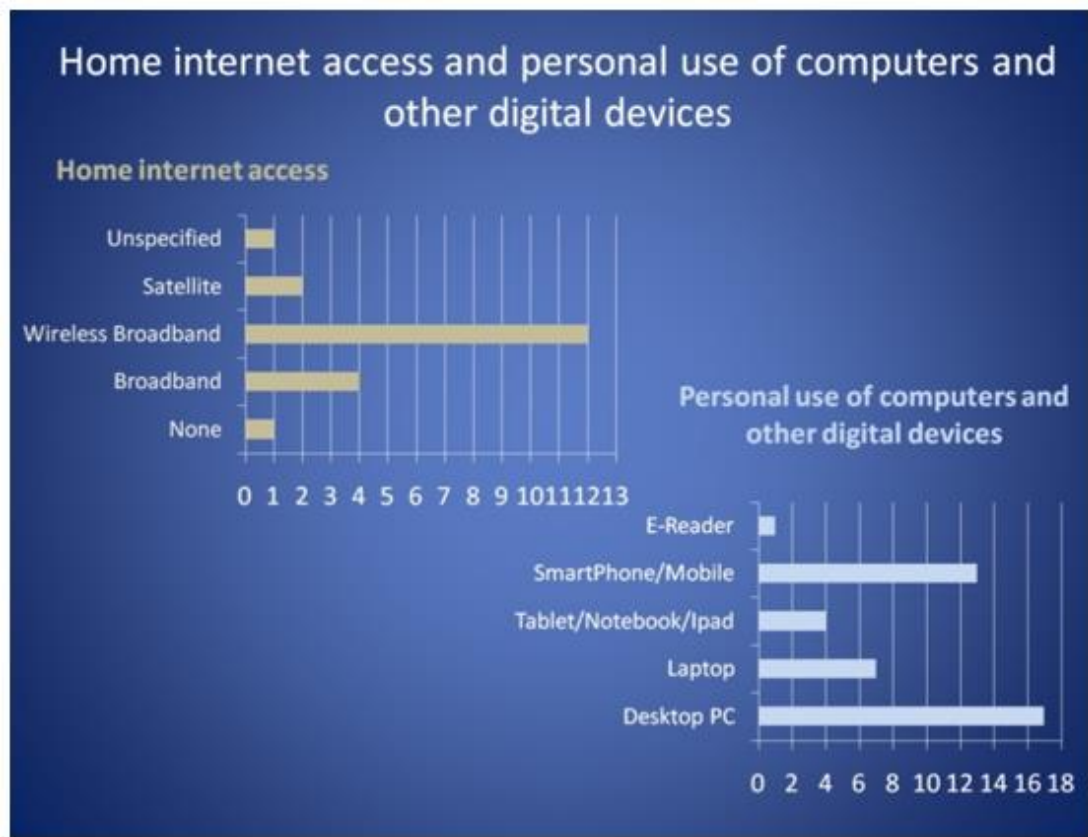
Figure 5-12   Respondents' home internet access and personal use of computers and other digital devices.

These data reflect a strong reliance on wireless broadband internet connections among the study's respondents, with only four respondents reporting access to a fixed broadband internet service. The data also reflect a high level of usage of computers and the internet among respondents linked to community volunteering and formal and informal learning activities, reflecting the aforementioned national trends reported in Section 5.2.2.

5.4.2.5. *Further analysis of the nature and extent of GraniteNet-related volunteering activity among respondents in the sample*

The remaining questions on the questionnaire probed further into the nature and extent of respondents' involvement in GraniteNet-related activities. As described earlier, the 20 respondents were community volunteers, drawn either from among GraniteNet's own volunteer workforce or from other local community organisations with a presence on the GraniteNet community portal (referred to as Communities of

Interest or CoIs), or in many cases, both of these. The exception is the Seniors Kiosk customer (in Set D in Figure 5-9), who was the only respondent in the study whose involvement in GraniteNet was solely as a customer of its on-site Seniors' Kiosk service (the second Seniors Kiosk customer participating in the study was also a Content Editor for their community group's GraniteNet web page). Ten of the volunteers linked their involvement in GraniteNet to their membership of at least 1 other local community group or community of interest (CoI). Of these 10 respondents, six performed Content Editor duties (that is, editing their community group's GraniteNet web page) for only one community group each, whilst four respondents were Content Editors for two or more community groups on the GraniteNet portal. These kinds of community volunteers who are involved in volunteering across community groups and make use of digital technologies related to their volunteering activities are referred to in the literature as "Bridges" (Kavanaugh, et al., 2009, p.68), as discussed in Chapter 2. Figure 5-13 illustrates the nature and extent of volunteers' involvement in GraniteNet based on the questionnaire responses.
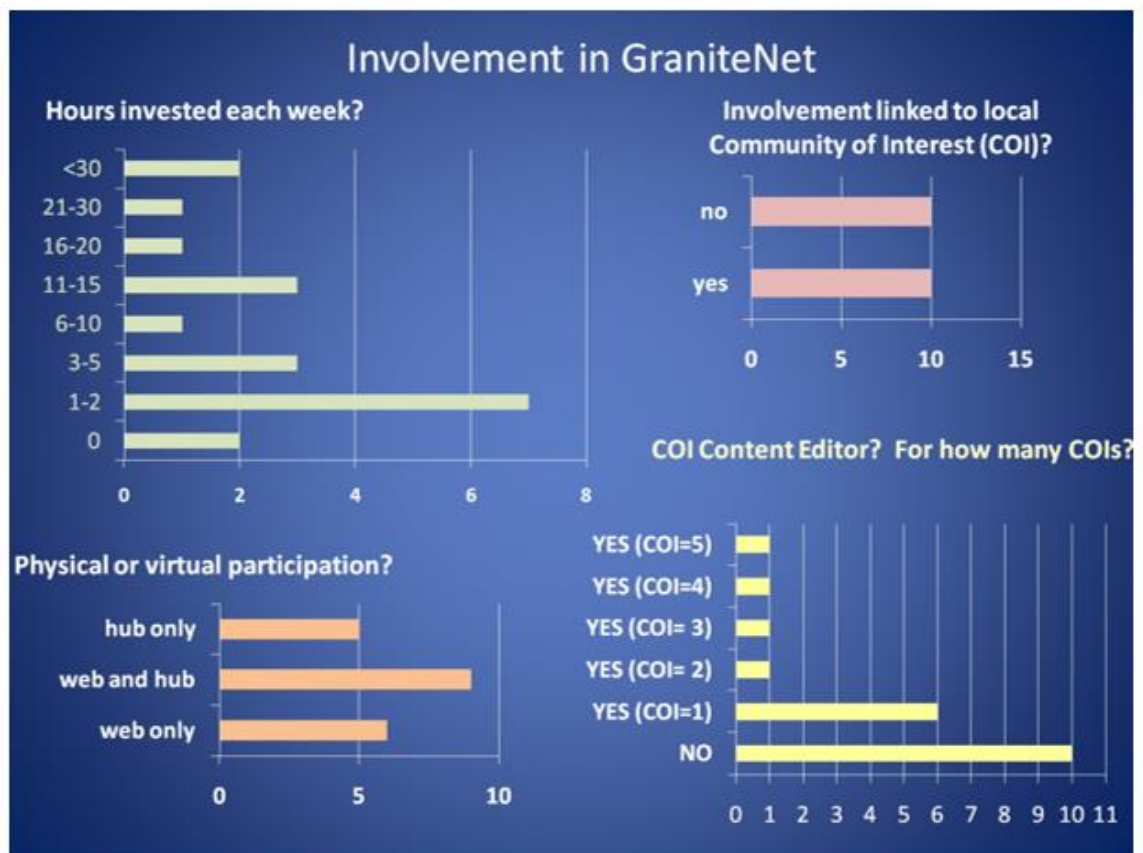
Figure 5-13   Nature and extent of respondents' involvement in GraniteNet.

As shown in Figure 5-13, seven respondents spent on average only one to two hours each week on their GraniteNet volunteering activities, whilst four spent between three and 10 hours per week and another four contributing between 11 and 20 hours weekly. Three respondents volunteered more than 20 hours per week, with two investing upwards of 30 hours per week on average. Two volunteers who had moved to the periphery and were no longer actively involved in GraniteNet related activities were not investing any hours in GraniteNet at the time of the study. One of the two Seniors kiosk customers, who was not identified as a volunteer for the purposes of the study, nonetheless reported investing one to two hours per week in her GraniteNet-related activity, and has been included in the abovementioned group of seven.

Further analysis of total average weekly hours contributed to volunteering at GraniteNet by the 19 volunteers at the time of the study, as reported in the questionnaire, was approximately 164 hours per week. Of these total average weekly GraniteNet volunteer hours, an estimated average of 75 hours per week (almost half of total average weekly volunteer hours) can be attributed to two respondents who were completing full time, remunerated work experience placements as part of a government-funded labour market program. A further 62 hours (37.8%) is attributed to five respondents whose community volunteering commitment was linked to receipt of social security payments, such as unemployment benefits. Two ex-officio[84] volunteers on the GraniteNet Board contributed a total of two hours per week (1.2%) with the remaining 25 hours per week, or 15.2%, contributed by 10 respondents whose GraniteNet volunteering was linked to their volunteering with other local community groups, referred to for the purposes of the study as "classic community volunteers" (Schugurensky, Duguid & Mundel, 2010)[85]. This breakdown of respondents' total average weekly volunteer hours by type of volunteer is shown in Figure 5-13.

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[84]   The term "ex-officio" is used to describe volunteers whose commitment is linked to their professional, paid employment role and who typically serve as an office-bearer on the management committee or board of governance of the community group or organisation.

[85]   Drawing on Schugurensky et al.'s (2010) typology of volunteers, the term *classic community volunteer* refers to local community members whose volunteering is not remunerated, usually involves performing tasks contributing to delivery of community services or to the work of a local community of interest, is a regular and sustained commitment over an extended period and is motivated either by a desire to help others or to support the community of interest group or organisation to sustain and further its work. They are distinguished from *episodic volunteers* and *new volunteers,* who are characterised as being "more pragmatic" (p. 82), and whose volunteering is likely to more conditional on meeting their own needs.
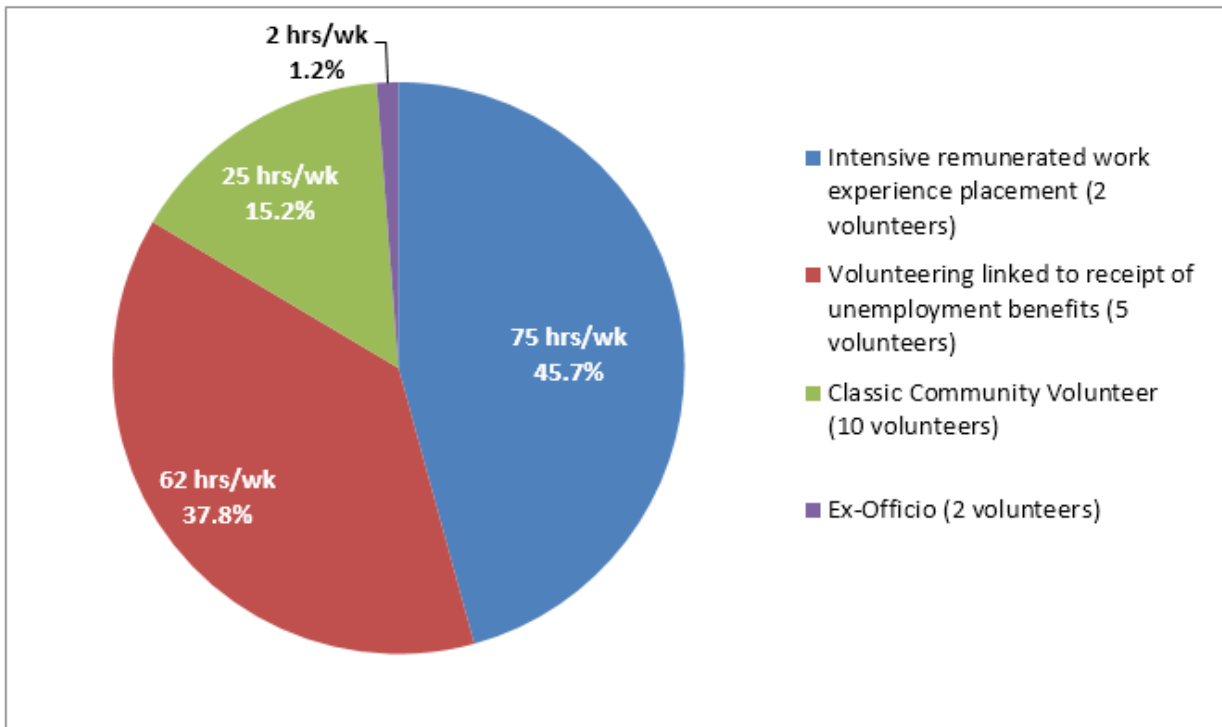
Figure 5-14   Proportion of total weekly average GraniteNet volunteer hours by volunteer type.

The graph illustrates that almost half of the average weekly hours contributed by GraniteNet volunteers at the time of the study (47.5%) was being contributed by a small number of individuals on intensive, remunerated work experience placements linked to vocational training, with a further 37.8% of average weekly volunteering hours linked to receipt of social security payments such as unemployment benefits. Just on 15% of the total average weekly volunteer hours were being contributed by the eight active classic community volunteers combined. The implications of this volunteer typology and activity for understanding volunteers' learning in GraniteNet are discussed in Chapter 7.

5.5.   Conclusion

The above information about the case study site, its geographical and historical context and its participants constitutes the context within which the results of the phenomenographic analysis of respondents' conceptions and experiences of learning in GraniteNet are to be interpreted. Data sources for the case study included authoritative reports and statistical data on local and regional characteristics of particular interest to the study, reports of empirical research conducted into relevant local and regional issues, research and evaluation reports and historical data and artefacts from the GraniteNet project archives, GraniteNet community portal artefacts

and analytics, the researcher's own experiential knowledge of the case, and participants' questionnaire responses.

Details of GraniteNet's activities physical and virtual activities at the time of data collection during 2012 were provided to support interpretation of the findings, with the primary criterion being the opportunity to learn about the phenomena under investigation (Stake, 2005). Against this backdrop, the findings of the phenomenographic analysis of participants' conceptions and experiences of learning as they were articulated in the respondent interviews and mind maps is now presented

.

Chapter 6.
Results of phenomenographic analysis of participants' conceptions and experiences of learning in GraniteNet

> For assertions, we draw from understandings deep within us [based on] a hidden mix of personal experience, scholarship, assertions of other researchers...and invoking the privilege and responsibility of interpretation of the data (Stake, 1995, p. 12).

6.1.   Introduction

Against the backdrop of the case study report in the previous chapter, the findings of the phenomenographic analysis of respondents' conceptions and experiences of learning in GraniteNet are now presented in answer to the two research questions:

- RQ1: What are the qualitatively different ways that learning is perceived and experienced by GraniteNet participants in the context of their participation in GraniteNet's activities and use of the community portal?

- RQ2: What are the qualitatively different ways GraniteNet participants and portal users experience using, and learning to use, ICTs?

Consistent with the conventions of phenomenographic research, the findings are presented in the form of categories of description representing a set of possible variations in the way that learning in GraniteNet is experienced by participants, including the range of qualitatively different ways respondents see and experience using, and learning to use, digital technologies. In the interests of presenting a full and open account of the research, presentation of these findings is preceded by an account of how they were derived with reference to the study's holistic conceptual framework and following the 10 step phenomenographic data analysis procedure presented in Chapter 4.

Following an overview of the categories of description in the outcome space, their groupings and defining characteristics, detailed descriptions of the conceptions of learning in each category are presented, linked to the holistic conceptual framework

guiding the investigation and supported with evidence in the form of extracts from interview transcripts and mind maps representative of the conception in that category. Additional materials supporting this researcher's discovery of conceptions and derivation of categories of description is provided at the appendices and includes dimensions of variation supporting identification and verification of critical differences between and among conceptions of learning in the seven categories in the outcome space.

The phenomenographic outcome space is then presented in graphical form as the collective learning consciousness of GraniteNet at the time of the study, highlighting the high-level structural relationships among the categories and illustrating these relationships in terms of expanding levels of awareness of aspects of the experience of learning in GraniteNet. Conceptions in the seven categories are then mapped back to individual respondents in the case study schematic to validate the findings.

The chapter concludes with a brief justification of the trustworthiness of the findings with reference to established criteria for determining the quality of the phenomenographic outcome space, and supporting the researcher's claims about the rigour and success of the research. Further interpretation and discussion of these findings with reference to relevant literature and the case study report in Chapter 5 is presented in Chapter 7, highlighting study's contributions to knowledge. The implications of the findings and contributions to knowledge are discussed in Chapter 8.

6.2.   Overview of the Findings and How They Were Derived

As outlined in the report of research methods and procedures in Chapter 4, data sources for the phenomenographic component of the study included transcripts of structured interviews with respondents and the mind maps that respondents constructed themselves during the interviews. The process undertaken to discover conceptions in the data, differentiate these conceptions on the basis of dimensions of variation and critical differences (Marton & Booth, 1997), devise categories of description and, finally, construct the outcome space, is summarised in the table at Appendix R, illustrating how conceptions and categories emerged during the iterative data analysis processes conducted during the pilot and primary data analysis phases of

the study. Broadly speaking, the phenomenographic data analysis process comprised the following sequences:

- *Inspection* of individual interview transcripts to discover discrete conceptions of phenomena (identifying qualitatively different ways of seeing and experiencing reflected in the data).

- *Focusing* alternately on referential and structural components of awareness to illuminate dimensions of variation and differentiating conceptions on the basis of these dimensions.

- *Sorting* of data extracts (quotations) into "pools of meanings" (Marton, 1998, p. 198), moving backwards and forwards between individual transcripts and identified conceptions.

- Gradual *refining* of conceptions into a "stabilised system of meanings" (Marton & Booth, 1997) represented by structurally related categories of description supported by selected extracts from the data (quotations and mind maps).

- *Validating* devised categories against individual transcripts and respondents' mind maps.

- *Labelling* of categories, construction of descriptions and finalisation of supporting quotes and mind maps representing each category.

- *Constructing* the outcome space in the form of a diagram of the categories of description illustrating their structural relationships.

Representative quotations from the interview transcripts and copies of respondents' mind maps constitute the empirical evidence supporting the researcher's analysis and interpretations of the data and support the detailed descriptions of the conception of learning in each category presented in Sections 6.3-6.6. As a prelude to presenting these detailed descriptions of conceptions and their supporting evidence, an overview of categories of description in the outcome space is now presented, followed by a summary of the defining features and characteristics of the conception of learning in each category with reference to constructs devised by the researcher during the data analysis process.

6.2.1. Conceptions of learning in GraniteNet: Seven categories of description; four broad perspectives

Phenomenographic analysis of interview transcripts and mind maps following the data analysis procedures described above revealed seven distinct and logically related conceptions of learning in GraniteNet, reflecting the range of qualitatively different ways GraniteNet participants and portal users perceive and experience learning in the context of their involvement in GraniteNet's activities and use of the community web portal[86]. Consistent with phenomenographic research conventions, the meaning of the conception of learning in each category—in terms of how learning in GraniteNet is actually experienced by respondents adopting that particular—is reflected in each category's title:

1. The Frontier Learning conception.
2. The (Community) Service Learning conception—Altruistic, Vocational and Leadership emphases.
3. The Community Information Literacy/Social Inclusion conception.
4. The Blended Community Learning conception.
5. The Digital Stewardship/Enterprise Learning conception.
6. The Community Technology Capacity-building conception.
7. The Learning Community conception[87].

These seven categories of description coalesce into four distinct groupings, as illustrated in Table 6-1, each of which reflects a particular perspective of GraniteNet as the learning context and environment: a Seniors kiosk Customer Perspective, a Community of Practice Group; a Communities of Interest Cluster; and a Community Development cluster.

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[86]   It is important to note that no single category or conception represents the perspective of any one individual; rather, the categories describe the range of variation in ways of seeing and experiencing GraniteNet, and learning in the context of GraniteNet, reflected in the data, any number and combination of which may reflect an individual's way of seeing and experiencing the phenomena in question at a particular point in time.

[87]   A diagrammatic representation of the study's outcome space showing the logical and inclusive relationships between and among conceptions in the seven categories is presented later in the chapter.

Table   6-1
Categories of Description, Groupings and Perspectives

Categories of Description	Grouping and Perspective
Category 1: Frontier learning conception	Seniors Kiosk Customer perspective
Category 2: (Community) Service Learning conception: Altruistic emphasis Vocational emphasis Leadership emphasis	Community of Practice Group (Provider perspective)
Category 3: Community Information Literacy/Social Inclusion conception	Communities of Interest Cluster (Customer/Provider perspective)
Category 4: Blended Community Learning conception	
Category 5: Digital Stewardship/Enterprise Learning conception	Community Development Cluster (Developer perspective)
Category 6: Community Technology Capacity-building conception	
Category 7: Learning Community conception	

As such, each grouping is representative of either one, or a blend of two, of three broad perspectives reflected in the data, linked specifically to the structure of awareness of GraniteNet as the learning context and environment reflected in the conceptions in that grouping. These broad perspectives[88] include:

- A Customer Perspective, distinguished by the experience of GraniteNet from the perspective of a customer (or user) of GraniteNet's community technology hub services, specifically the Seniors kiosk service (represented in the outcome space by the unique Seniors kiosk customer perspective in Category 1).

- A Provider Perspective, distinguished by its conception of GraniteNet as a community service provider, reflecting the perspective of volunteers involved in management and delivery of technology services from the

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[88]   This aspect of the analysis was informed by the work of Bruce, Abdi and Stoodley (2013).

GraniteNet community technology hub (represented by the (Community) Service Learning conception in Category 2).

- A dual Customer/Provider perspective, representative of volunteers involved in editing their community groups' web pages on the GraniteNet community portal (represented by the two conceptions in the Communities of Interest Cluster).

- A Developer Perspective (represented by the three conceptions in the Community Development cluster), reflecting the perspective of volunteers involved in the development of GraniteNet as a Community Informatics and Learning Community project.

This categorisation of conceptions and groupings is presented in diagrammatic form in Figure 6-1[89], showing each of the seven categories of description distinguished by its unique colour, in its respective grouping. The diagram illustrates firstly, how the conception of learning in each category is constituted by a conception of GraniteNet as the learning context and environment as one aspect of a holistic conception of learning in GraniteNet[90]. Secondly, the diagram illustrates the difference between a "group" and a "cluster" of conceptions.

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[89] This graphical representation of the categories of description is provided as a heuristic. The phenomenographic outcome space showing the structural relationships among conceptions in the seven categories is presented later in the chapter in Figure 6.32.

[90] As illustrated in the holistic conceptual framework in Chapter 3, the conception of GraniteNet as the learning context and environment is one of three learning aspects, the other two being the conception of the content or 'what' of learning and the conception of the learning process. As explained in Chapter 4, the conception of GraniteNet as the learning context and environment was able to be separated analytically and ontologically from the conceptions of the content and process of learning whilst still contributing to the holistic conception of learning in each category.
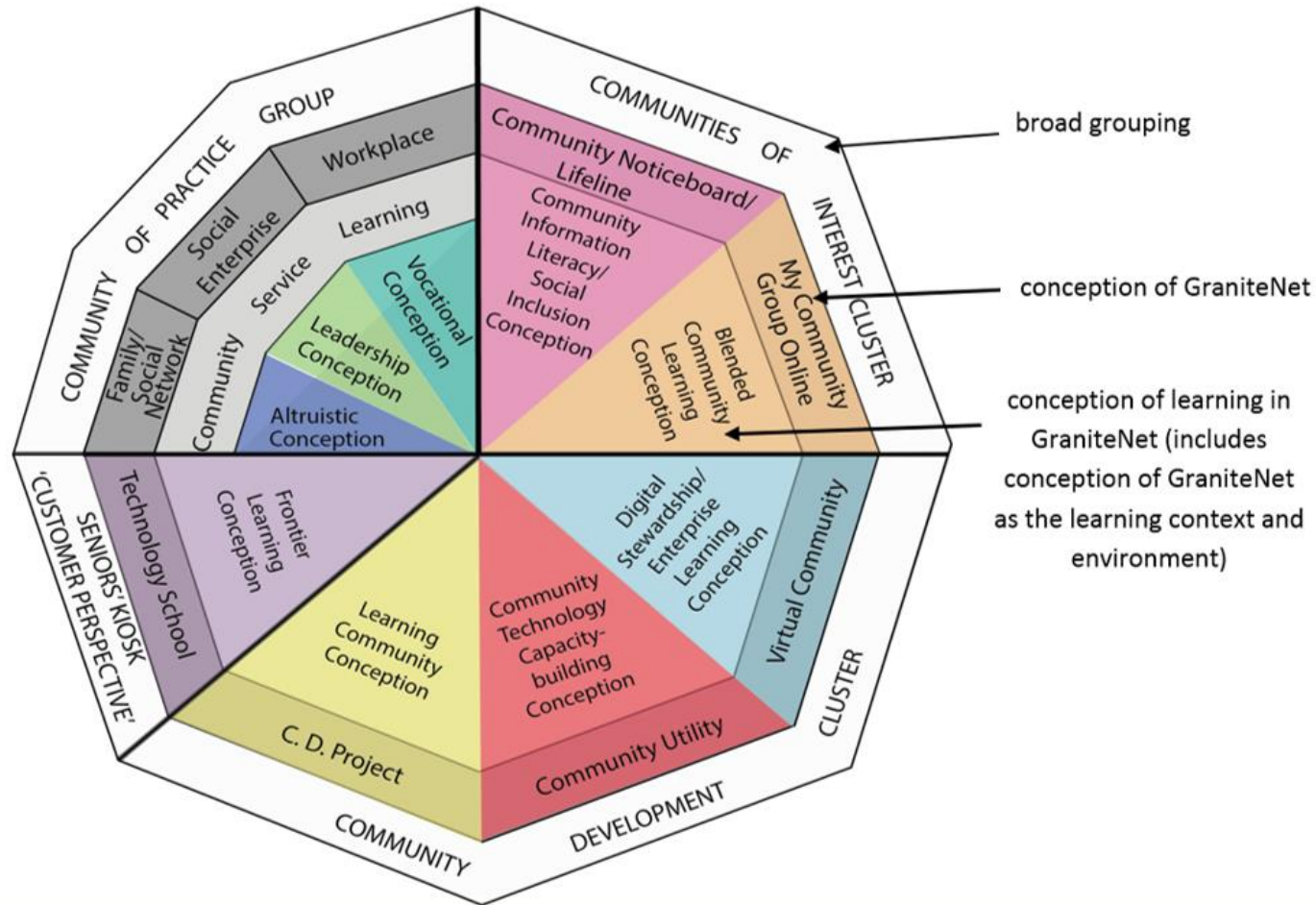
Figure 6-1 Categories of description of learning in GraniteNet showing category groupings.

For example, shown in the upper, right section of the diagram in Figure 6-1, the Communities of Interest Cluster is a grouping of two complementary, yet quite distinct conceptions of learning in GraniteNet, each of which is constituted by its conception of GraniteNet as the learning context and environment as one aspect of the overall conception of learning in GraniteNet. Moving clockwise, the Community Development Cluster is a group of three complimentary, yet distinctly different conceptions of learning in GraniteNet experienced from the Developer perspective of GraniteNet as a community development project. In contrast, the Frontier Learning conception is characterized as the Seniors Kiosk Customer perspective, constituting a category and grouping of its own with its own unique Customer perspective. Finally, the Community of Practice Group is characterized by a common core conception of learning in GraniteNet—the (Community) Service Learning Conception—comprised of Altruistic, Vocational and Leadership emphases, each with its respective conception of learning from a Provider perspective. As such, the diagram illustrates the constitution of conceptions of learning and their broad groupings, linked to perspectives related to the nature of respondents' experiences of GraniteNet as the learning context and environment as one aspect of that conception. The conception of learning in each of the seven categories is now further characterised with reference to constructs devised by the researcher during the data analysis process to differentiate the conception of learning in each category.

6.2.2. Characterising conceptions of learning in GraniteNet: Dominant learning metaphors, learning frontiers and key learning questions

Consistent with theorising in the literature[91] about people's conceptions and experiences of learning and related phenomena, metaphor has been used as a conceptual and linguistic device to identify, analyse and characterise respondents' conceptions and experiences of learning in GraniteNet. *Dominant learning metaphors* reflecting the conception of learning in each category, where possible using respondents' own metaphors and utterances identified as part of the early stages of the phenomenographic data analysis procedure, are used to characterise

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[91] See for example Bailey (2003); Candy (2004); Edwards and Bruce (2006); Hager and Halliday (2006); Sfard, (1998).

and communicate the meaning—or referential component—of that conception of learning. In addition to *dominant learning metaphors,* two other devices are used to characterise the distinctive conception of learning in each category. *Key learning questions* are used to reflect the primary focus and object of learning in each conception, while the construct of a *learning frontier*[92] is used to denote the content domain with the greatest learning threshold, constituting the most "troublesome" knowledge (Kligyte, 2009, p. 541) identified for that conception. Table 6-2 elaborates the key characteristics of the conception of learning in each of the seven categories in the study's outcome space with reference to these *Dominant learning metaphors, Learning frontiers* and *Key learning questions*. Further explanation of and supporting evidence for this analysis is provided in the detailed descriptions of conceptions in each of the seven categories in the outcome space in Sections 6.3-6.6.

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[92] The concept of a 'learning frontier' used as a device for characterizing the conception of learning in each category should not be confused with the Frontier Learning Conception of learning in GraniteNet (Category 1), where learning itself is experienced as conquering a digital frontier.

Table   6-2

Conceptions of Learning in GraniteNet: Learning Frontiers, Dominant Learning Metaphors and Key Learning Questions

Category/sub-category title and descriptor	Conception of Learning in GraniteNet		
	Learning frontier/s	Dominant learning metaphors	Key learning questions
Category 1:Frontier Learning Conception *Learning as conquering a technology frontier*	Digital literacies	Acquisition, Conquest, Discovery	What is there to learn? What is out there for me? How can I get back there/get out of here? What can I do with this knowledge?
Category 2: (Community) Service Learning Conception *(Community of Practice Group)*			
A: Altruistic emphasis *Learning as a two-way street*	Digital literacies Organisational knowledge and know-how Personal development Adult learning (digital literacy) – facilitation skills	Participation, Conquest, Journey Navigation, Survival	What's going on here? How can I contribute? How do I do this? How can I help this person?
B: Vocational emphasis *Learning as a two-way street with signposts*	as for 2A + Vocational competence, capability Career development learning Personal development	Participation, Orientation, Measurement, Development, Apprenticeship	What is my skill level? How am I doing? How relevant and useful is this? Is this going to help me get to where I want to go?
C: Leadership emphasis *Learning as stepping up*	as for 2A + Organisational leadership Personal development	Participation, Conquest, Becoming, Survival, Expansion, Navigation, Construction, Development	What can we do? How can we change this? How will we survive?

Communities of Interest Cluster			
Category 3:Community Information Literacy/ Social Inclusion Conception *Learning to connect with my community*	Local (proximate) community knowledge (Digital) Community Information Literacy	Orientation, Discovery, Navigation, Investigation, Belonging, Connection, Linking, Construction, Creation	Where do I go? What is out there for me? What is happening and how can I get involved? How can I help? What information do people need/want? How can I best get the message out there?
Category 4:Blended Community Learning Conception *Learning as community interaction and networking*	Digital and information literacies: Content Editor Skills Set Community (e)learning Digital stewardship	Navigation, Expansion, Connection, Interaction, Exchange, Participation	How can we get more people involved? Are people doing anything useful with that information? Which are the most important skills to learn?
Community Development Cluster			
Category 5:Digital Stewardship/ Enterprise Learning Conception *Learning as creating my local community online*	Community development – digital stewardship Enterprise development	Problem-solving, Experimentation, Construction, Bricolage,	Who is going to be using this? What are their needs? What am I missing here? Is there something I don't know? Is there a better way?
Category 6:Community Technology Capacity-building Conception *Learning as living in the digital world*	Community development - Community Informatics	Awareness, Insight, Seeing, Visioning, Expansion, Empowerment	What do I need to know/do to help this person? How can we use technology to strengthen the community?
Category 7: Learning Community Conception *Learning as driving the learning community*	Community development – mobilisation, engagement participation in lifelong learning	Experimenting, Driving, Transporting, Expanding, Guiding, Supporting/ Scaffolding, Conducting	What is GraniteNet about? How do people see GraniteNet? What are we doing and why are we doing it? What are the opportunities? What do people want/need to learn? How can we get people to participate?

6.2.3. Unpacking conceptions of learning in GraniteNet with reference to the study's conceptual and analytical frameworks

Each of the seven categories of description in the study's outcome space is now described in detail with its supporting evidence in the form of quotations from the interview transcripts and also with reference to associations (branches) in respondents' mind maps. A matrix outlining the approach taken to presenting the detailed descriptions of conceptions in each category with reference to the conceptual and analytical frameworks and their key concepts is presented at Appendix S and serves as an organising framework for the reader. The conception of learning in each category is unpacked with reference to the three learning aspects in the study's holistic conceptual framework: the conception of GraniteNet as the learning context and environment, the conception of the learning content and the experience of the learning process[93]. An important distinction is made between "conceptions" and "experiences" of learning whereby the term *conception* is used to denote "ways of seeing" or perceiving and *experience* to denote respondents' first order lived experience of the phenomena in question, or "ways of experiencing" (Marton & Booth, 1997)[94]. Discovered by the researcher during the data analysis process, an expanded level of awareness reflecting learning about how others see and experience the world and phenomena in the world is referred to as the *respondent expanded second order perspective* and includes learning by experiencing or discerning variation (Marton & Booth, 1997).

The description of the conception of learning in each category concludes with an explanation of the relationships between the conception in that category and other conceptions in the outcome space with reference to critical differences and dimensions of variation identified and refined during the phenomenographic data analysis process, as elaborated in the table at Appendix R. These critical differences and dimensions of variation are summarised for each conception in tabular format at the appendices

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[93]   The reader is referred back to the holistic conceptual and analytical framework presented in Figure 3-24.

[94]   The premise underpinning this distinction is explained in the discussion of the analytical frameworks adopted in the study in Chapter 3.

referenced throughout and include, among others: the conception of GraniteNet as the learning context and environment; the primary object of activity (noesis)[95] in this environment and, related to this, whether learning is intentional or incidental; and the primary object and mechanism(s) of learning. Selected respondent mind maps of "GraniteNet" and of "Learning in GraniteNet", annotated by the researcher during the data analysis process[96], are also used to illustrate critical differences between conceptions in different categories and have been inserted at relevant points in the category descriptions. The description and explanation of conceptions of learning in the outcome space begins with the Frontier Learning conception in Category 1 and concludes with the Learning Community conception in Category 7.

6.3.   The Frontier Learning Conception

The Frontier Learning conception represents a Seniors Kiosk Customer perspective of learning in GraniteNet. The object of activity is learning about and learning to use digital technologies in GraniteNet's physical space of the community technology hub. Key characteristics of the Frontier Learning conception are summarised in Figure 6-2 with reference to its conception of GraniteNet as the learning context and environment, conception of digital technologies (as learning content) and conception of the experience of learning. The learning frontier in this conception of learning is digital literacy, and the key learning question is "What is there to learn?" The dominant learning metaphors in this conception are learning as acquisition, conquest and discovery.

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[95]   Husserl's (1913, 1931, as cited in Richardson, 1999) concept of n*oesis* refers to the intentional experience is comparable to this study's reference to the primary object of activity.
[96]   This researcher's annotations made on respondents' mind maps are clearly identified with her initials in each case to distinguish them from the respondent's own notations in their construction of the maps. Researcher annotations include, firstly, numbering of associations (mind map branches) reflecting the sequence in which they were addressed by respondents in their explanations of their mind maps during the interviews. They also include explanatory material from the respondents' explanations of their mind maps during the interviews where this is deemed necessary for the reader's interpretation of the respondent's intended meaning.
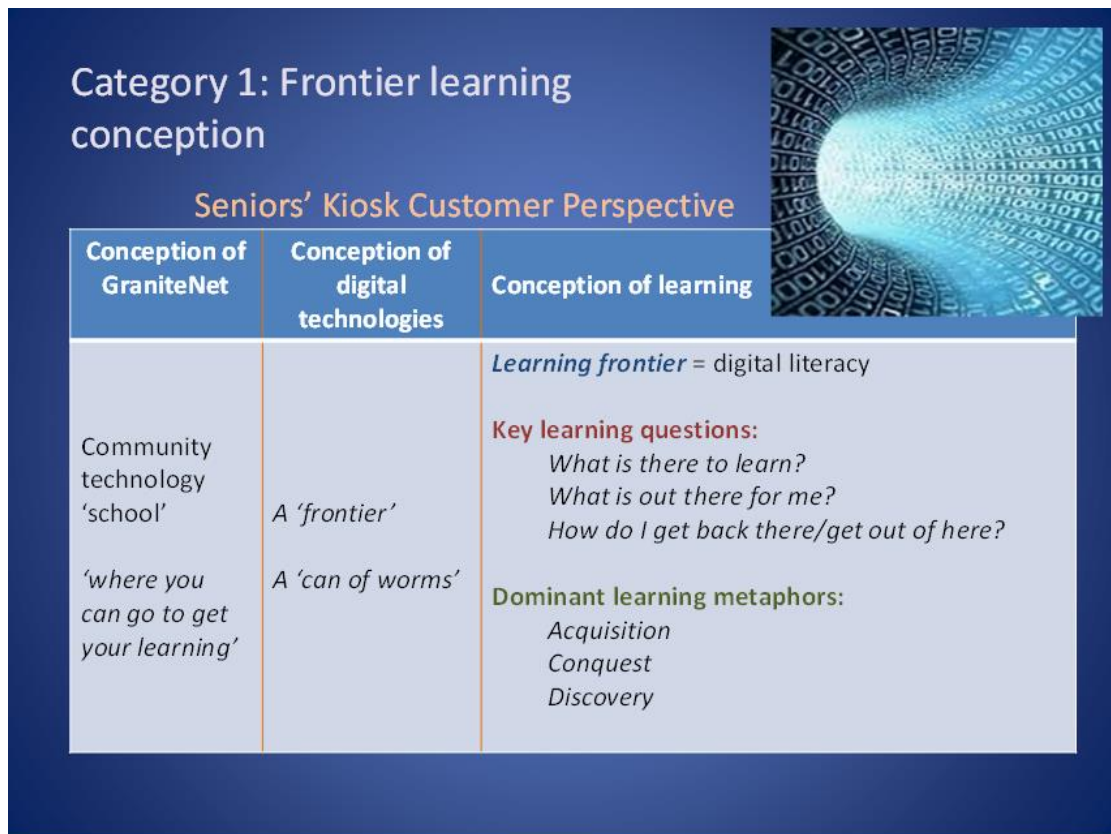
Figure 6-2   Key characteristics of the Frontier Learning conception.

Focal in awareness in this conception of learning in GraniteNet is a personal experience of learning about and learning to use digital technologies, experienced as "learning the computers", "opening a can of worms" and "conquering" a new frontier respectively:

Yes, just learning the computers…

I think I've opened a can of worms as they say.

I haven't really fully conquered that, to be able to show you how it works.

Primary motivations for learning discovered in the data are communication with family and friends and proving to oneself one's capacity for learning as one ages.

The contact, being in contact with people.

Believe it or not, I met a friend on the computer. I haven't seen her for forty years …and that was to me, wonderful. It was really nice to catch up…. Yes—just looking through emails… It was that first contact, you're not scared of, but wary of in case they don't want to and that was lovely.

Yes, just keeping the brain alive and try to beat those nerves and take courage.

With reference to the conception of GraniteNet as the learning context and environment, thematised in this conception are the relational aspects of GraniteNet as a learning environment, which is experienced as a technology "school":

Someone told me about Granite Net and you can get your learning.

It's like contradicting myself—I don't want to go to school tomorrow (I call it school)

I find it's very relaxed; you come here and just sit down and there's so much else going on around.

The annotated respondent mind maps of GraniteNet and of Learning in GraniteNet in Figure 6-3 and Figure 6-4 illustrate aspects of the Frontier Learning conception of learning in GraniteNet. The associations reflected in the branches of the mind map of "GraniteNet" in Figure 6-3 and in the mind map of "Learning in GraniteNet" in Figure 6-4[97] reflect a focus on personal learning about and learning to use digital technologies to participate in life in a digital era, with an emphasis on (re)connecting with family and friends and an awareness of a digital frontier and an expansion of digital horizons.

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[97]   As explained in Chapter 3, respondents completed two mind maps in the interviews: a mind map of GraniteNet and a mind map of Learning in GraniteNet. The number on each mind map (e.g. 2.8) corresponds with the number allocated to the respondent who produced the mind map, and correlates with the numbering of respondents as shown in the case study schematic Figure 3-3 in Chapter 4.
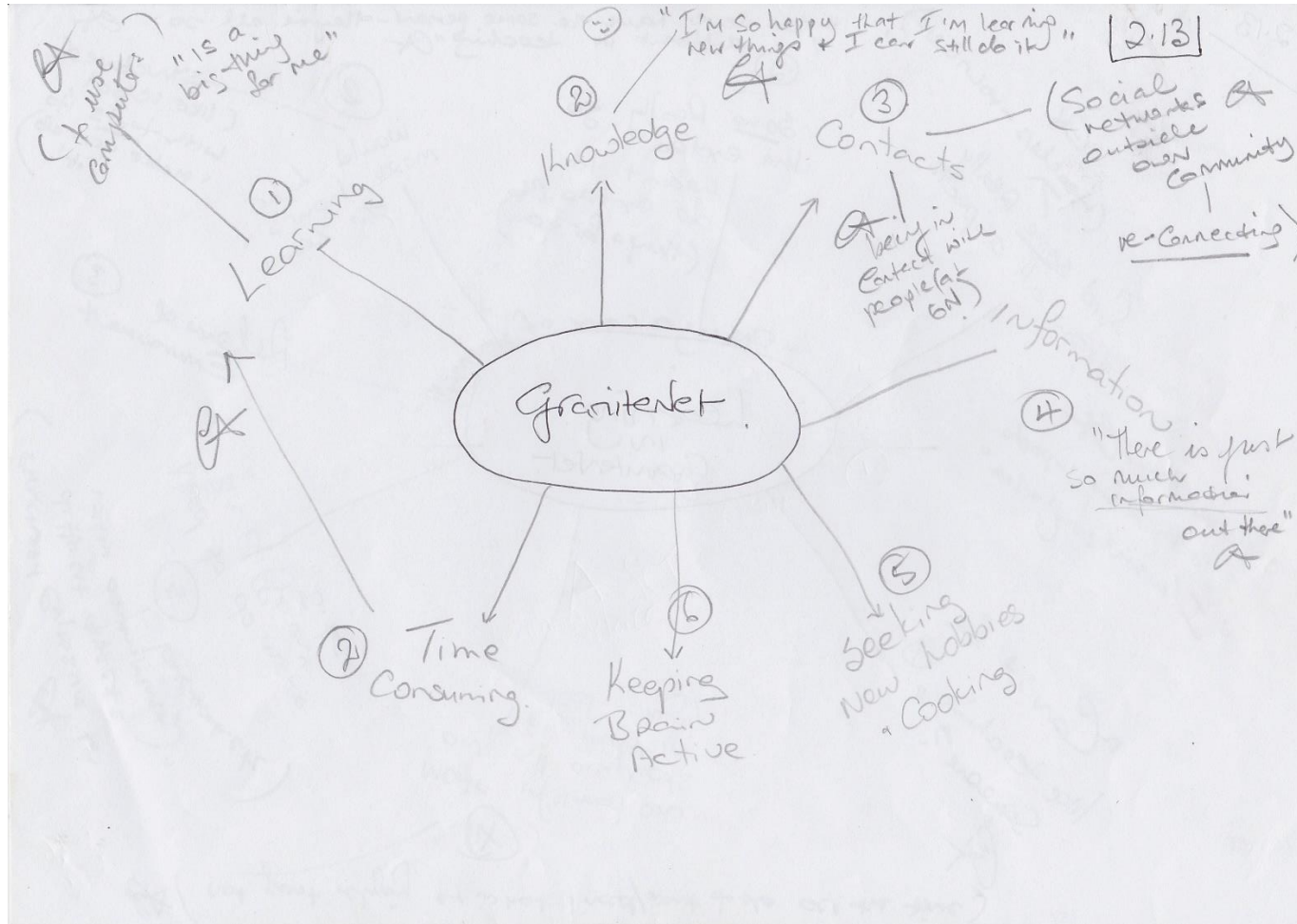
Figure 6-3 Mind Map 2.13 of GraniteNet: Frontier Learning Conception.
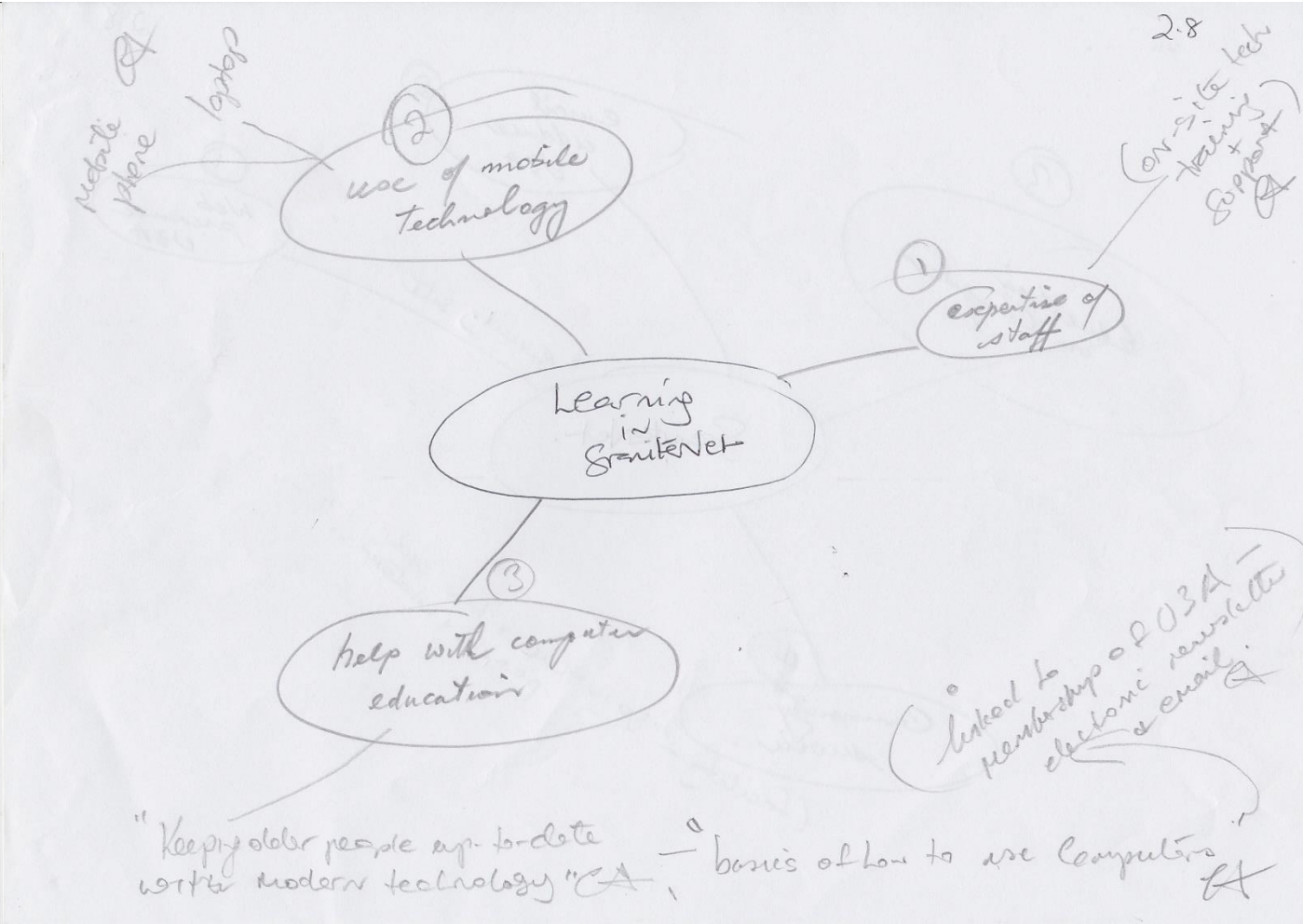
Figure 6-4   Mind Map 2.8 of Learning in GraniteNet: Frontier Learning Conception

Referential and structural components of the conception of learning in the Frontier Learning conception are illustrated in Figure 6-5 by representative extracts from the interview transcripts, linked to the three learning aspects in the study's holistic conceptual framework.
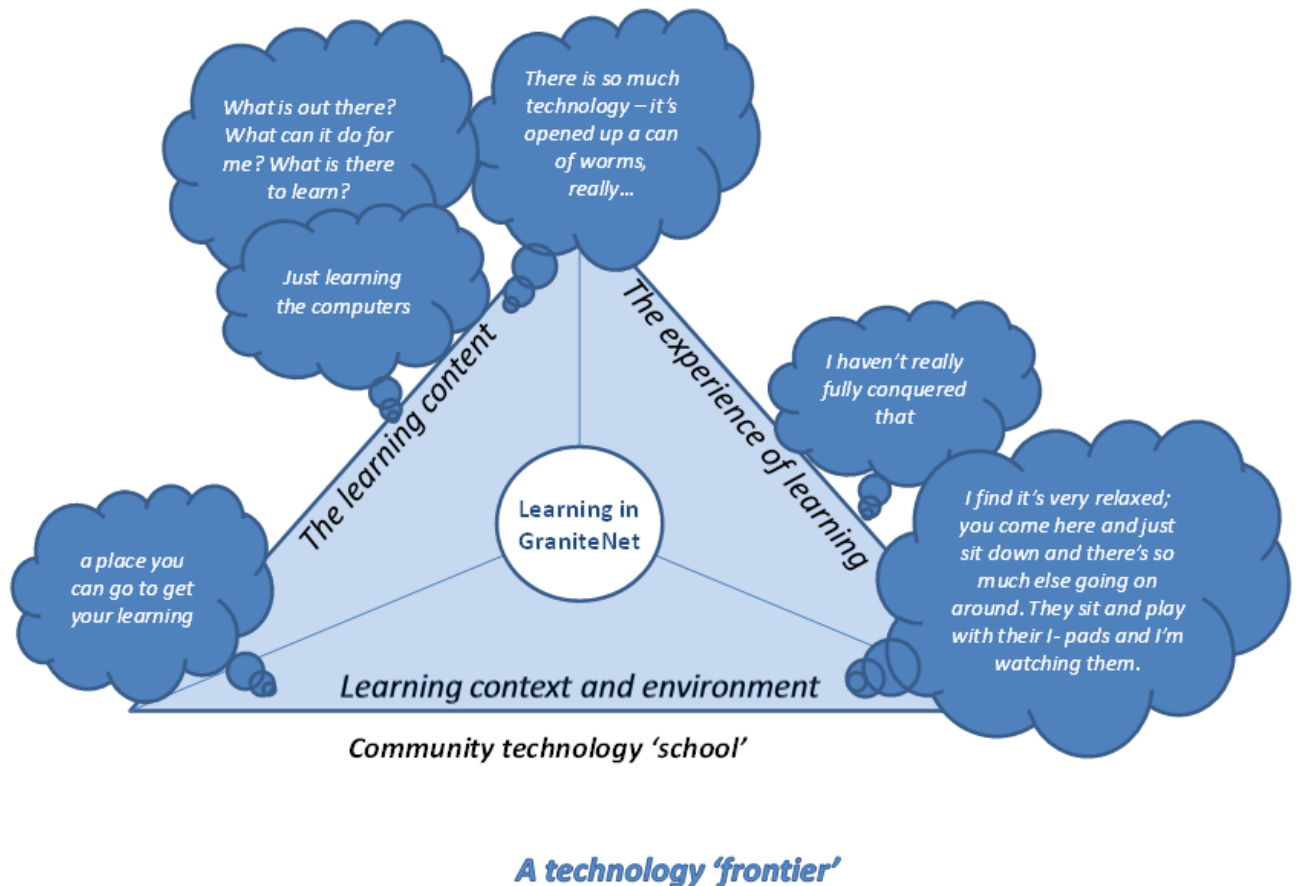
Figure 6-5   The conception of learning in the Frontier Learning conception linked to the three learning aspects in the study's holistic conceptual framework.

As part of the experience of learning about and learning to use digital technologies as conquering a frontier, there are concerns about losing track of time, of wasting time and resources, of losing privacy and falling victim to unscrupulous scammers, and of embarking on a learning journey where there is no turning back and where the learning outcome is unknown (hence, "opening a can of worms"):

It's time consuming. I can find that I can just go in there and just look at my emails and stuff. It's always exciting to see if you've got any news. Then I'm lost; three hours later, I come out. It is really interfering with my sewing…

Well, I'm very basic on that. I mean I've got my printer there and using it with colour and I don't know how to get out of that at the moment. I've tried and I can't do it. I feel that I'm wasting that cartridge. I don't know how to get out of that.

I'm sure that I have probably lost things, but I've put some things in boxes and I can't get out, but I know they are there. I can't waste them.

When I looked on the site, like it was basically just ads for businesses type of thing and there was one there and I didn't know how to get out of it….

Facebook I think is very dangerous. Once you know how to use it and I choose not to... It is different because it's out there for everybody to see. It's not private.

6.3.1. Digital literacy learning content in the Frontier Learning conception

Table 6-3 summarises the conception of the learning content in five aspects of learning about and learning how to use digital technologies as digital literacy learning content in the Frontier Learning conception, supported by quotations from the interview transcripts in which this conception is articulated.

Table 6-3
Digital Literacy Learning Content in the Frontier Learning Conception

Digital literacy learning content	Representative extracts from interview transcripts
Learning about computers, laptops and various digital technologies—how they work, new technology related concepts, terminology, the scope of the field ("what there is to know")	"I really wanted to know a bit more about the computer. …Yes, just learning the computers… When you hear people talking about computers, that's what I'd love to learn—computers, basically, that's what I want to learn."
Learning to use email, mobile phones, text messaging and Skype for communication with family and friends	"I haven't yet, but I am going to, because we have one of these Android phones and I have just taken out a five dollar a month data allowance, but I don't really know how to use it myself. So, I'll be doing that." "I would like the Skype—I've got to learn the Skype…"
Learning about and using/choosing not to use social media	"I might do something with Twitter, but I'm not a social media person. I don't like Facebook."
Learning to manage unwanted or unsolicited communications on the internet and by email	"That's another thing— I need to ask or know all the questions like they're teaching you. How not – know what not to do. How do you get rid of people that come in and want sites that you don't know? How do you get around that—I have no idea?"
Learning to play card games such as Mah-jong	"Every night, before I go to bed, I play Mah-jong… Mah-jong is the easiest".

6.3.2. The experience of the learning process in the Frontier Learning conception

With reference to the experience of the learning process, or the "how" of learning, learning in this conception is both intentional and incidental, with processes and mechanisms of learning experienced in two main ways: firstly, learning from more experienced people and perceived experts through one-on-one, face-to-face instruction, demonstration and guidance; and secondly, learning through observation of others using digital technologies in a casual, informal social learning environment:

> *I come in and you never have the same person—they're all so different in teaching. The young ones seem to really have more patience than the older people and they somehow explain it a little bit easier…*
>
> *They sit and play with their iPads and I'm watching them...*
>
> *It's all just even sitting back and watching, you pick up little things…*

Also involved is independent learning by trial and error, practising new skills ("repetition"), problem-solving "teaching yourself", and working through computer-based tutorials:

> *Yesterday I came and felt lost, why did I come? She couldn't tell us how to solve the problem. I worked and did it myself, which was probably, when you think of it, a good thing. It made me do it. Really, I suppose, it was a good thing.*
>
> *You've really got to get in there and follow up and not just go home and play games, which I was doing for the first few weeks.*
>
> *I think the more I use something. That's what I keep telling my husband, "I've got to practice so I get it right." I'm making excuses for spending time on there.*

6.3.2.1. *Learning barriers and affordances*

Two primary learning barriers are thematised in this conception: the first is fear of computers, digital technologies and the internet, and the second, a lack of awareness, knowledge and understanding of the scope of the field or content area of digital technologies, "what there is to learn; what is out there for me?", which impacts on being able to express one's own learning wants and needs.

> *I was always scared of it.*
>
> *She said to me, "the only bit of advice I can give you is - the only way you'll break it is if you drop it". That's the best bit of advice I've had.*
>
> *I'm still low—I haven't got the confidence. I'm scared—no I'm not scared any more, I know I can't break it. Yes I am still low but I'd like to get up there and learn more.*
>
> *…they come and [ask me] "What do you want to do today?" Well, I don't know, because I don't know what I'm capable of doing! I can't answer the question because I don't know anything about a computer; I don't know all these wonderful things that you can do….*

Learning affordances[98] thematised in the data are related to the affordances of the learning environment, the characteristics of the trainers and availability of one-on-one support.

> *Number one is the expertise of the staff there. They do seem to be well up with all aspects of computer activity and I have done one learning session… with the big guy who helps people in that way. He is a very knowledgeable sort of person. He gives you confidence I must admit.*
>
> *They were lovely…. They've taught me a lot.*

A major barrier reflected in the data relates to the absence of a structured approach to training with opportunities for learning about the scope of the field of "computers" and opportunities for assessment of learning and feedback.

> *I might be interested in that to see just what there is to learn. On certain days, we were going to be doing this or, you know …It could be just "On Tuesday – two o'clock to three, we are going to talk about Gigabytes" or something, and you think you will go along.*
>
> *I would love to sit here and do more, maybe a bit more time and become more like a school class and then have tests on what you do. It would be making you do it.*

A summary of perceived barriers to and affordances for learning about and learning how to use digital technologies reflected in the Frontier Learning conception

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[98] A learning affordance is defined for the purposes of this study as a situation, arrangement or tool that provides opportunity for, facilitates or enables an individual's learning.

of learning in GraniteNet, supported with quotations from the interview transcripts in which this conception is articulated, is presented atAppendix T.

6.3.3. An expanded awareness of the affordances of digital technologies for improving the quality of life of older community members

In addition to the primary learning incentives of maintaining connections with significant others (familial affiliation) and re-connecting with friends (social participation), a sense of the affordances of digital technologies for enhancing the quality of life of frail elderly people is thematised in the data, with altruism emerging as a secondary, and emergent, learning incentive. This is the expanded second order perspective[99] reflected in this conception and suggests an affiliation with GraniteNet's digital inclusion mission:

> *If you had the opportunity, maybe you could teach someone…Help in a simple way. Not too much technology.*
>
> *Yes and that's why, maybe down the track somewhere, I should be able to help old people in nursing homes and spend one-on-one with them, because they can't get out… It would be so nice to do things for them… They just want to play games or maybe talk to their families, look at photos.*

6.3.4. Critical differences between the Frontier Learning conception and conceptions in other categories in the outcome space

Critical differences between the conception of learning in the Frontier Learning conception and conceptions in the other categories relate to the focus of the Frontier Learning conception being exclusively on learning as acquisition of basic digital literacy skills in the physical GraniteNet space as a dedicated learning environment, and where learning in a single content domain (digital literacy) is the primary object of activity, or noesis. In contrast, the experience of learning in conceptions in other categories in the outcome space is primarily embedded in participation in other activity. Learning is therefore not necessarily the primary object of activity in the other categories, and also involves learning in multiple content domains. Other critical

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[99] The respondent expanded second order perspective refers to learning about how others see and experience the world and phenomena in the world and includes learning by experiencing or discerning variation.

differences relate primarily to the broad perspective of GraniteNet as the learning context and environment (that is, Customer versus Provider), and the experience of the learning process, including the mechanisms of learning (that is, acquisition versus participation). Critical differences between the conceptions of learning in the Frontier Learning and (Community) Service Learning conceptions are summarised at Appendix U with reference to the set of dimensions of variation differentiating conceptions and experiences of learning in GraniteNet outlined in the table at Appendix R[100].

6.4.   The (Community) Service Learning Conception and the Community of Practice Group

As illustrated in the diagram in Figure 6-1, the conception of learning in Category 2 is constituted by a core (Community)[101] Service Learning conception comprised of three sub-categories—an Altruistic emphasis (2A), a Vocational emphasis (2B) and a Leadership emphasis (2C)—each representing a variation on the common, core Altruistic conception. Together, they constitute the Community of Practice Group. In the (Community) Service Learning Conception, GraniteNet is experienced as a community service organisation and technology hub, with management and delivery of on-site digital inclusion facilities and services in a face-to-face learning and working environment focal in awareness. As such, it reflects a Provider rather than a Customer perspective of GraniteNet. The community-based organisation of GraniteNet and its on-site digital inclusion services are focal in awareness in this category, with the GraniteNet community web portal at the margin of awareness, experienced as the organisation's website. Relational aspects of GraniteNet are thematised, including helping others (altruism) and social inclusion. As such, GraniteNet is perceived as a community service organisation with a strong welfare orientation and is seen and experienced as a "family" and a "social network".

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[100]   Critical differences in the conceptions of learning in Categories 1, 2A and 3 are also summarised at Appendix Z.
[101]   The word "community" is placed in parentheses in the title of Category 2 to discourage an association with the terms 'community service' on the one hand (which has connotations related to enforced community service work as a result of a criminal conviction) and 'service learning' on the other hand (which is a term used to refer to industry placements undertaken by university students in partial fulfilment of a degree program), neither of which accurately reflects the flavour of the conception of learning in this category.

The first one is "family". Since I've started here it pretty much feels like a family; we are a little family in GraniteNet. It comes along with helping others, which is what we really do. The atmosphere in here is great, so many of our clients comment on the atmosphere here and it's like we are one big family.

In a way it acts like a little bit of a social network, because I have noticed that some of our "Broadband for Seniors" people, come in and they see somebody they have never seen before and after a while they start talking to each other. They are getting to know extra people, so it's a little bit of a social hub

According to this way of seeing, digital technologies are perceived as necessary tools for participating in life in a digital age. From the Provider perspective, GraniteNet volunteers perceive (Seniors' Kiosk) customers' motivations for learning to be based primarily on a need and desire to communicate with family and friends and so, in this sense, digital technologies are experienced vicariously as a "frontier", but also as providing a "lifeline" for Seniors' Kiosk customers who need to "step into a new world of technology".

I suppose the first one that always comes to mind, is the seniors' aspect of it. GraniteNet provides this opportunity for seniors, who are often facing quite significant pressures from their children and possibly, even worse, their grandchildren—life in the digital age.

A lot of them now, you find is that their grandchildren are going— "Get an email, get a Facebook. You can see this, you're in touch with us" and this is why a lot of them come in…Most of them really enjoyed learning and getting over that digital divide.

To me, learning here is teaching people how to step in to a new technology. Giving the elderly and disadvantaged a chance to step into a whole different world. A world where they are not getting left behind. There is nothing that is going to stop technology and a lot of the old ways are going and they have to learn to keep up— step out of their square a little bit….

This conception of digital technologies is shared among GraniteNet customers and many of the volunteers expressing an Altruistic conception, who are themselves

seniors in the early stages of exploring the digital frontier, as so-called "digital immigrants" (Prensky, 2001)[102].

Key characteristics of the (Community) Service Learning conception and its three subcategories are illustrated in Figure 6-6 with reference to the conception of GraniteNet as the learning context and environment, conception of digital technologies (the content of learning linked to RQ2) and the experience of the learning process in each subcategory. In summary, learning in the (Community) Service Learning conception is experienced as participation in collective, communal activities where learning across a number of content domains is afforded through engagement in work practices and supporting the learning of others. Learning is thus experienced as social participation[103] (Wenger, 2009), as being reciprocal ("a two-way street") and is motivated by a desire to help others and to get the job done. The learning frontiers for this conception are multiple and include various combinations of digital literacies, organisational knowledge and know-how, facilitation of adult learning and individual personal development.

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[102]   Digital immigrants are described by Prensky (2001) as those who were not born into, but who have learned to adapt to, the digital world and who have "a digital immigrant accent" or "foot in the past" (p. 2).

[103]   Social participation refers to "processes of being active participants in the *practices* of social communities and constructing *identities* in relation to these communities" (Wenger 2009, p. 210).

Figure 6-6 Key characteristics of the (Community) Service Learning conception and its subcategories in the Community of Practice Group.

The conception of learning in each of the three subcategories in the (Community) Service Learning conception is now briefly described, supported with quotations and mind maps in which this conception is expressed by respondents.

6.4.1. The conception of learning in the Altruistic emphasis: Learning as a "two-way street"

In the Altruistic emphasis, which is the core of the (Community) Service Learning conception, the motivation for participation in GraniteNet's volunteering activities—as the intentional experience or *noesis*—is to contribute to a worthy cause, which in this case can be described as digital inclusion with a strong social inclusion focus.

> *All I knew was that I wanted to help, because I like being a volunteer, not just here, I just like being a volunteer, for a good purpose; a good cause….It makes me feel good to be able to offer these services and to be doing something for it, as a volunteer.*

Focal in awareness is helping others and getting the job done, along with the personal rewards and sense of satisfaction experienced as a result. Learning is thus experienced as a means to this end (instrumental) as well as a welcome corollary of completion of required tasks (incidental) and helping others to learn digital literacy skills (reciprocal):

> *In a general sense, the learning is a two-way street again in that the volunteers are training but they are also learning and also using the new skills and that's a wonderful opportunity that GraniteNet does afford, free of charge. The volunteer issue, give and take, certainly does work very well there.*

> *Learning here is all of us teaching each other and sometimes our clients accidently teach us, because we then have to think when they have a sticky question we don't know about…so along the way we all learn.*

> *Because it's also great to learn with them as you're teaching. If you're both learning it can make it more interesting. You sitting down and telling someone everything that you know, might get a little bit boring for that person. I find it more 'feel good' to learn with teaching.*

The conception of learning as "a two-way street" is highlighted in the annotated respondent mind maps in Figure 6-7 and Figure 6-8, in which associations (mind map

branches) reflect the Altruistic conception of GraniteNet. For example, association 6 in the mind map of GraniteNet in Figure 6-7 reflects the personal learning afforded by contributing to the helping organisation, while associations 1, 3 and 4 in the mind map of GraniteNet/Learning in GraniteNet[104] in Figure 6-8 reflect the Altruistic conception, with 1, 4 and 6 emphasising relational aspects, and 2, 3 and 5 highlighting personal learning opportunities afforded by involvement as a volunteer.

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[104]   Note that respondent 2.1's two mind maps of GraniteNet and of Learning in GraniteNet shown in Figure 5-9 were drawn on the same page (differentiated using a different coloured pen or pencil for each one). All other Phase 2 respondents' mind maps of GraniteNet and of Learning in GraniteNet were drawn on separate pages. The 4 respondents in the pilot study completed only 1 mind map during the interview, of 'GraniteNet'.
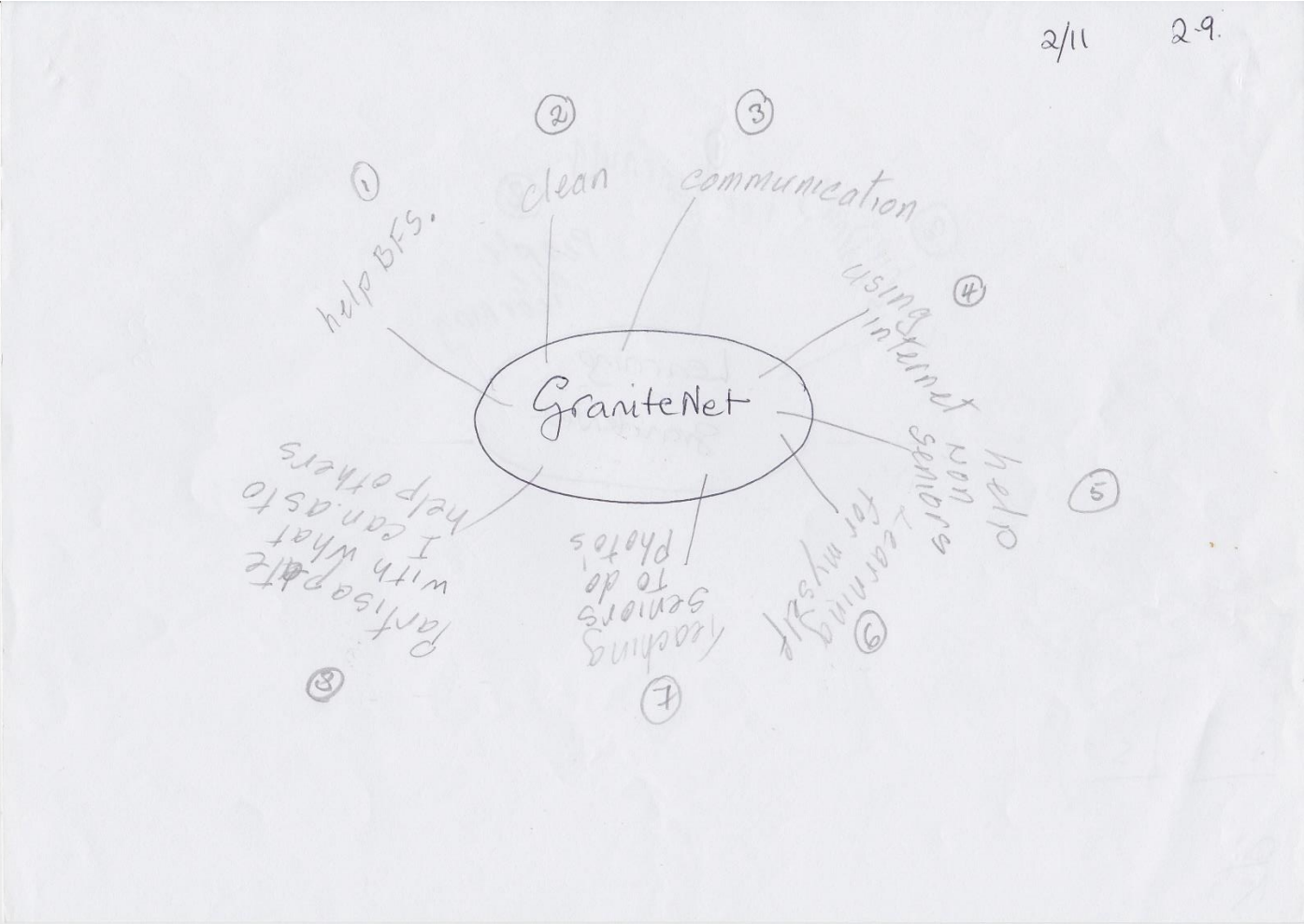
Figure 6-7 Mind map 2.9 of GraniteNet: (Community) Service Learning conception—Altruistic emphasis.
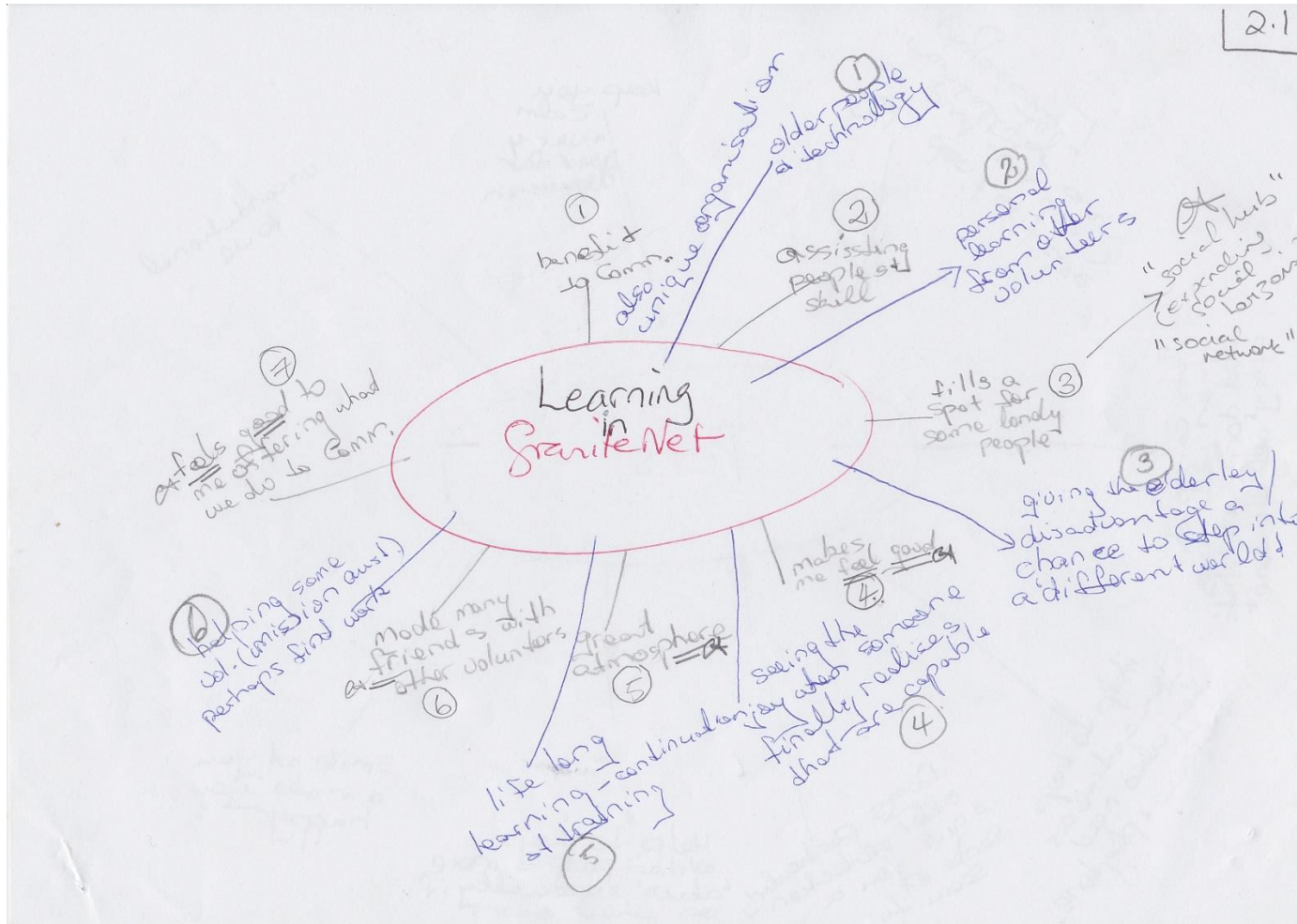
Figure 6-8 Mind map 2.1 of GraniteNet/Learning in GraniteNet - Altruistic emphasis

6.4.1.1. *The conception of the learning content in the Altruistic emphasis*

The conception of the learning content in the Altruistic emphasis includes learning across four content domains:

- Digital and information literacies (basic and more advanced).

  We've got an Internet Café [program] now which we put in how much money they give us, totals how much hours and how many minutes they get, and then, after that, their computer shuts down and goes back to the "Café" mode.

  …learning a little bit more about mobile phone technology and how it can be inter-related with my computer and also cloud computing. Well, I suppose the first time I put a page on the web site would be memorable. Only for my own personal gratification, I suppose.

- Organisational knowledge and know-how.

  Being on the Committee I have to attend lots of meetings. I have to write the minutes because I am involved in that sort of thing [So], being on the Committee and learning things.

  I'm pretty much learning every day, more about GraniteNet.

- Facilitation skills (that is, facilitating older adults' digital literacy learning), which includes learning to understand others' experiences of the digital divide as the expanded, second order perspective.

  I think a lot of people learn best in their own time, at their own pace [and in their own way]. Simply, that we are all individuals, we can't all learn the same way….

  Some of the people, they don't know exactly what they want— they can't express….

  It comes down to their ability to learn really. I show them the way that I know and they might not be able to grasp that, so I would have to think of a different way to teach them. If I don't know one, it's going to take me a while to figure it out.

- Personal development learning, including generic and so-called "soft skills"[105].

Socially, I used to be really shy, so that is something that I try to work on. Interacting with the public and stuff, it has been very good for that. Then again, with the interacting, it's something that I have been working on it. Hopefully, I'll get better.

As a volunteer, I have learnt a lot. [My confidence] has grown all the time, from the time I started here. It is growing.

I've learnt how to nicely greet customers, using the phone and coming through the door.

Specific learning content in each of these content domains is elaborated in the table at Appendix V supported with reference to quotations from the interview transcripts representative of utterances in this category. As noted in the table, the expanded awareness of learning to understand others' experiences of the digital divide in the Facilitation Skills content domain—as the respondent expanded second order perspective in this conception—is reflected in the respondent mind map of "Learning in GraniteNet" in Figure 6-9. Associations shown in the mind map branches reflect the Altruistic conception of learning in GraniteNet, with branches 2 and 5 reflecting an expanding awareness of others' conceptions and experiences of using and learning to use digital technologies.

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[105]   The term "soft skills" is used to describe interpersonal and communication skills, social literacy and cultural understanding, (Jarvis, 2009) whereas the term "generic skills" is used to describe a broader range of skills including working in a team, leadership skills, problem-solving, planning and organising, which incorporates the soft skills
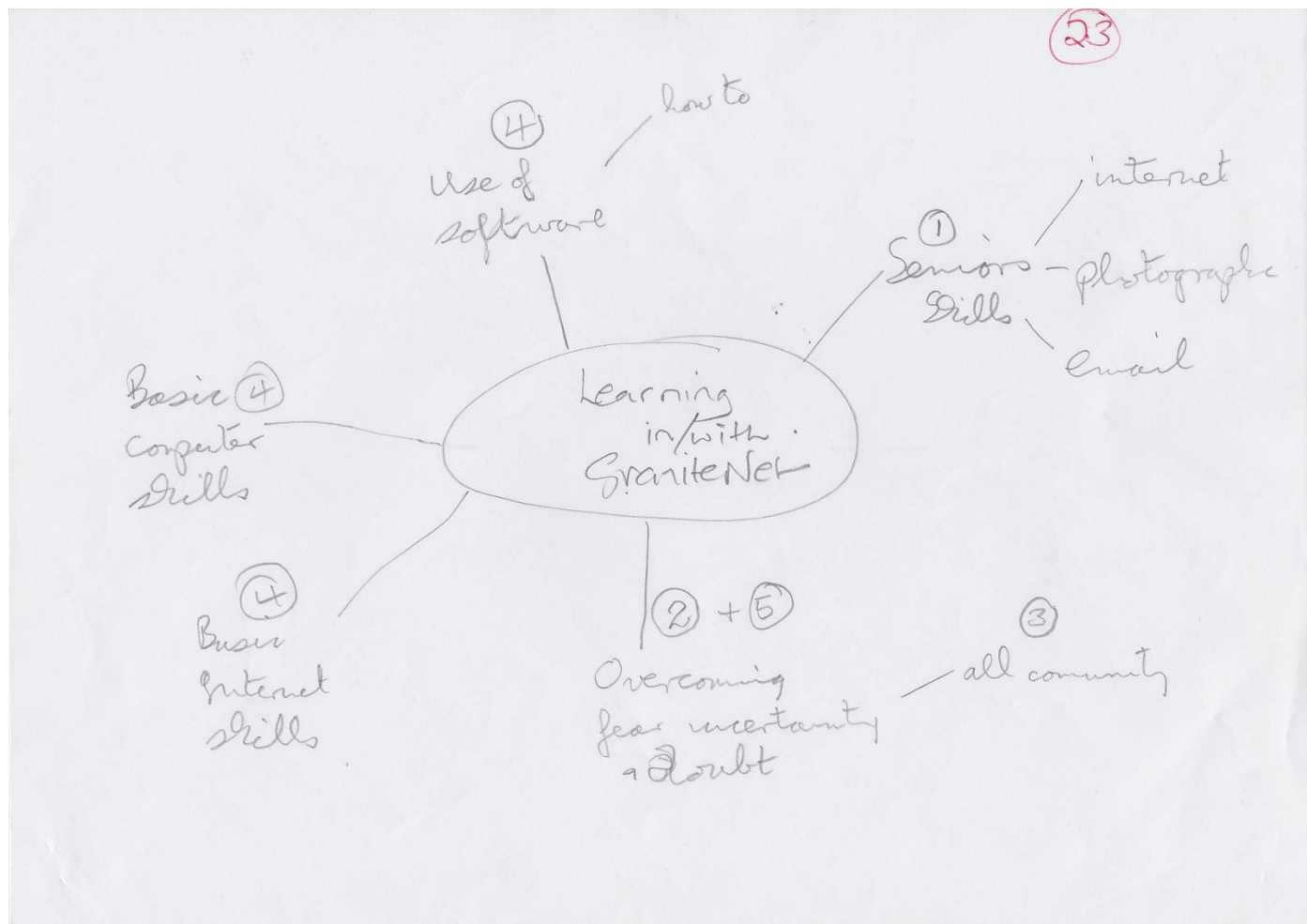
Figure 6-9   Mind Map 2.3 of Learning in GraniteNet: (Community) —Altruistic emphasis.

6.4.1.2.   *The experience of the learning process in the Altruistic emphasis*

Linked to learning in the above content domains, the learning processes and mechanisms in the Altruistic emphasis are experienced in three main ways:

- Incidental learning through participation in organizational practices.

    I don't [know what I'm going to learn] until it crops up. The Android Tablet, I don't know how that works, but I will learn about that when it comes. As of now I'm doing ModX. I had absolutely no idea until the other day.

    Well, at the moment, it's photography. I didn't know a lot about it, so when I offered to help the students with the photography I learnt a lot more than I expected. It's really good to learn when you are teaching.

    Yes. I learn more doing it for somebody else rather doing it for myself. It doesn't stick, up here in my brain, when I'm doing it for myself, but if I'm helping someone else out, then it sticks with me longer, if that makes sense.

- Intentional learning through participation in organizational practices.

    Observing— just watching the people here that have been at GraniteNet before, observe what they are doing and how they have done it and give it a go, see my chance.

    At the moment I am learning that through [Glen] and [Phil]. Something comes in, I'll step in and figure out what the problem is with them and see how they fix it. At the moment, I'm still waiting for my turn, once my confidence is up, to fix one, fix one program.

- Intentional, individual self-directed learning.

    Research, really. Mainly, that's pretty much what I have done since I got here is researching a lot of stuff. Pretty much comparing it— you don't just go in and get the one article and think "this is it". Put that article aside and then keep researching to compare it with other ones to make sure that it is true.

    I just try and practice myself and eventually I figured it out.

- Occasional participation in structured training sessions.

> *I did the course and I found I had a natural affinity for it. After doing that course, I then, more-or-less taught myself how to use Publisher and in the time in between learning Publisher, I've also done a couple of PowerPoint and I have taught myself PowerPoint type of activities… so I have the ability to teach myself that sort of thing.*

Conceptions of the processes and mechanisms of learning as experienced in this conception are elaborated in Appendix W supported with reference to quotations from the interview transcripts representative of utterances in this category. Referential and structural components of the conception of learning in the Altruistic emphasis of the (Community) Service Learning conception in Category 2 are illustrated in Figure 6-10, with representative quotations from the interview transcripts linked to the three learning aspects in the study's holistic conceptual framework. The conception of the learning content—as what people say they are learning as a result of their involvement as GraniteNet volunteers—and their experience of the learning process are elaborated to provide an indication of the scope of learning content and the nature of the learning processes in this conception reflected in the data.
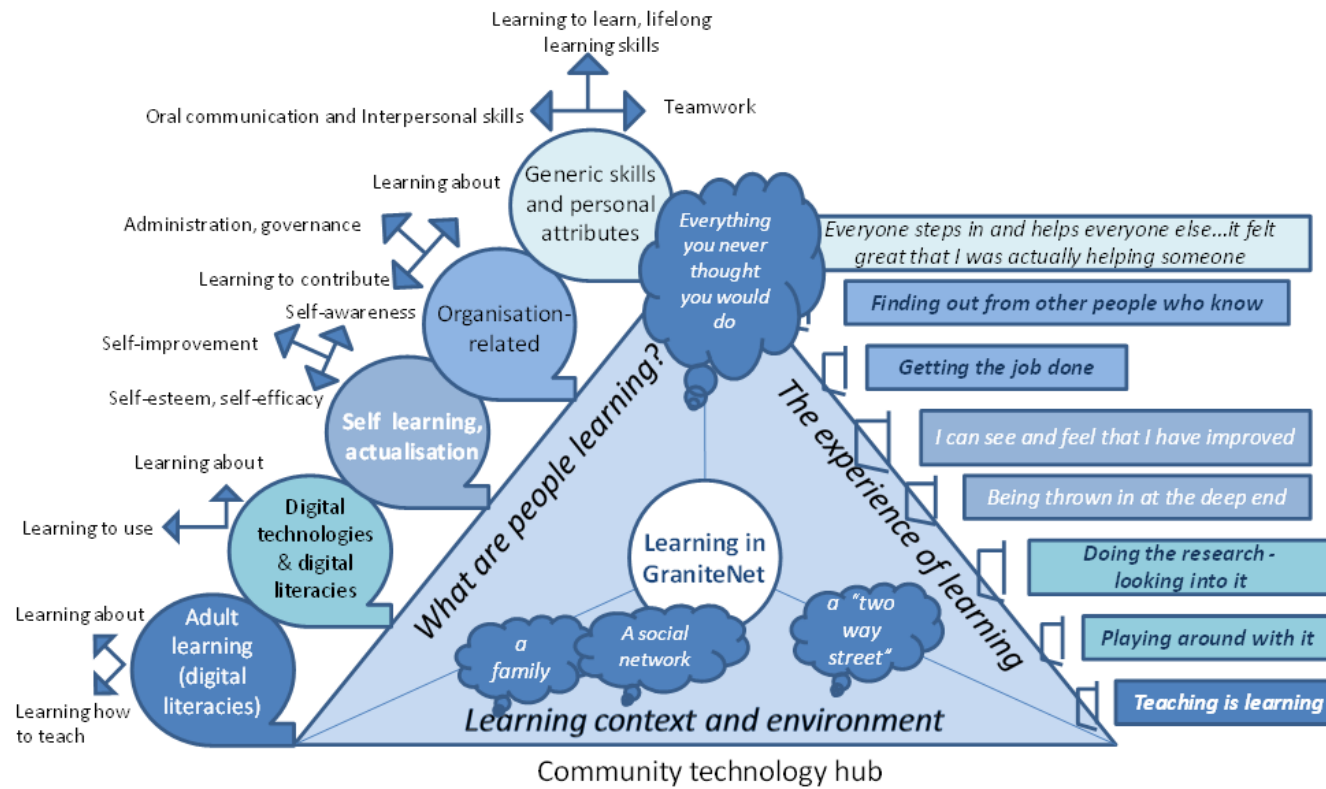
Category 2A: Service Learning – Altruistic Conception

Figure 6-10   The conception of learning in the Altruistic emphasis of the (Community) Service Learning conception linked to the three learning aspects in the study's holistic conceptual framework.

6.4.2. The conception of learning in the Vocational emphasis as an "a two-way street" with signposts

The conception of learning in the Vocational emphasis in the (Community) Service Learning conception is inclusive of and expands the core Altruistic emphasis and is constituted by a conception of GraniteNet as a "friendly workplace" and a conception of learning in GraniteNet with a strong vocational focus. Focal in awareness in the vocational conception of GraniteNet are the technology-related digital inclusion services provided from the organisation's premises in the CBD, with relational aspects of the workplace learning environment thematised.

> *Here we're based on helping people use computers and whatever they need; when you are at [other community service organisation] it's all about helping people in need—we don't do computer training over there. It's a real big change to go from one workplace to another.*
>
> *Work colleagues and network for employment and stuff like that and the people that you meet, your friends and acquaintances.*
>
> *The volunteers that work here are very, very polite… they have very nice natures, friendly to work with. It makes it easier to get along in your work place and [they] are very friendly.*
>
> *When I think of GraniteNet, I'm always thinking web sites and computers, its not-for-profit and we help a lot with the advertisements that's based on the web sites. We do a lot of advertising for other places. One on one training and the internet kiosk.*

Learning in the Vocational emphasis involves learning whilst contributing to the work of the helping organisation with a focus on building one's own capability as the object of activity, or intended experience, linked to formal training and vocational goals. The conception of learning as a "two-way street" is therefore shared with the Altruistic emphasis, but with a heightened awareness of monitoring one's own learning progress and benchmarking of knowledge and skills against those of co-workers and external competency standards and qualifications—that is, vocational learning "signposts":

> *As I said before, "what I've learnt software-wise is QuickBooks and Mod X." I'm not sure that ModX would be something that would go to many other jobs. But QuickBooks is definitely something that will help with the line of work that I am trying to get into.*
>
> *I would eventually like to continue on to Certificate Four, but I'm not in an admin. job, I think Certificate Three is probably enough, but I find, now that I have started learning in the last couple of years, I really like it. I'm not sure that it is something that I will end up using, because I am quite happy in an admin position, but I just liking learning.*
>
> *Because I'm also in a business admin course so everything that I learn in that also relates to what we do here. I try and get as much feed-back as possible in every aspect that I think I need to learn. I would probably say everything….*

As illustrated in the summary of key characteristics of conceptions in the Community of Practice Group in Figure 6-6 the learning frontiers for this conception are vocational and career-related and the key learning questions are "What is my skill level?" and "Is this going to help me get to where I want to go?" An expanding awareness and valuing of the GraniteNet community portal is evident, as is an affinity with digital technologies and an awareness of their use as a learning tool, linked to achievement of vocational goals. The Vocational emphasis in the (Community) Service Learning conception is reflected in the respondent mind map in Figure 6-11. Associations at branches 1, 3,4, 5 and 6 reflect a focus on personal learning and capability development, including benchmarking of ICT-related capability against co-workers, with branch number two reflecting the contribution to the helping organization from the Altruistic emphasis in Category 2A.
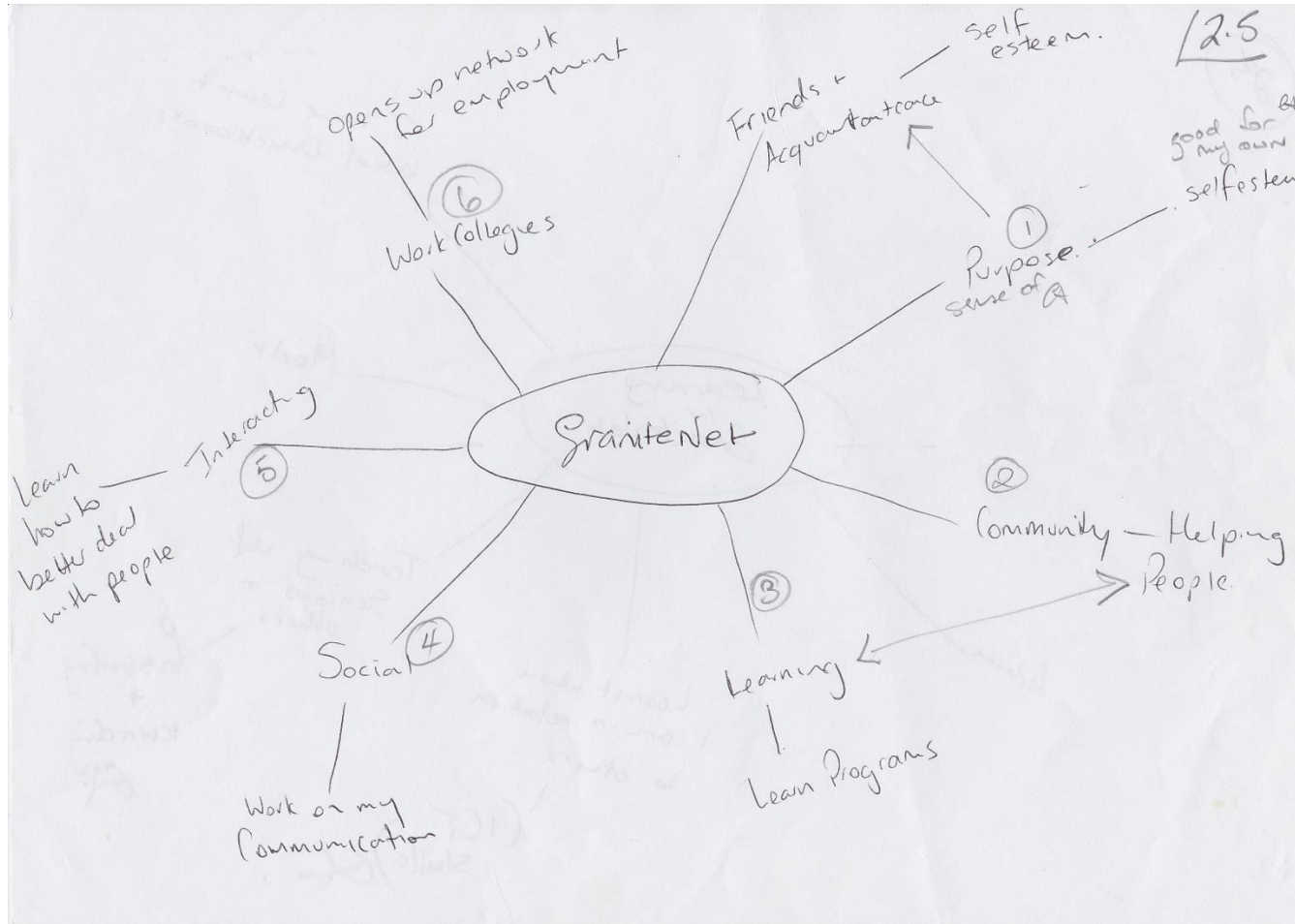
Figure 6-11 Mind Map 2.5 of GraniteNet: Vocational emphasis.

6.4.2.1.   *A digital native conception of digital technologies in the Vocational emphasis of the (Community) Service Learning conception*

The Vocational emphasis shares the core conception of digital technologies with the Altruistic emphasis, where they are perceived as necessary tools for participating in life in a digital age, and for customers of the Seniors' kiosk, as a frontier and a "lifeline". However, in this conception there is an increased awareness of the integration of digital technologies into most aspects of everyday life as well as their use as a learning tool, a stronger affinity with digital tools and equipment and a higher level of self-efficacy when it comes to using digital technologies for working and learning. Thus, the conception of digital technologies in the Vocational emphasis could be described as coming from the perspective of a "digital native"[106] rather than a "digital immigrant" (Prensky, 2001, p. 1).

> *Because we use computers for just about anything these days... It's a way to find any information in the world and do what you want with it.*

> *I have always been using them. I feel that if I picked up any kind of technology, I would be able to use it and learn how to use it very quickly.*

> *Because it's just one of my main things I love doing. Research; creating stuff; managing; keeping stock lists, anything to do with the inside of a computer, I just love it...No fear—not with computers. Anything I love doing, I don't have a fear of it. I'd rather learn more than fear it.*

> *You can get to the same website on your computer but I prefer to do it on my phone, even if I have a computer with me, I use the phone because I can walk around while I do it. Yes. You could do the same thing on the computer, but I do it on my phone. It's all there. I prefer it.*

6.4.2.2.   *The experience of learning in the Vocational emphasis as building capability*

In this conception, the experience of both the content and the process of learning is inclusive of the five broad content domains and three learning processes reflected in the Altruistic emphasis. However, in the Vocational emphasis, the experience of learning includes a heightened awareness of personal learning linked to formal training and vocational goals or employment experience. Thematised is

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[106]   The term "digital native" is by Prensky (2001) to describe "the first generations to grow up with" digital technologies and the internet and who are therefore "native speakers" (p. 1) of the digital language of computers, video games and the internet.

reflection on and monitoring of one's own learning, including how learning undertaken in the context of GraniteNet relates to learning undertaken in other settings, primarily formal vocational education and training. There is also an increased emphasis on technology-related aspects of the organisation's operations and a heightened awareness of the relevance of learning and of benchmarking one's own level of knowledge and skills in relation to others, linked to a focus on managing one's own learning (learning to learn).

> *Being at Granite Net, has made me see in myself, compared to what is where I am on in the region of computers. I'm learning all the admin stuff which is what I am trying to do.*
>
> *I'm doing a course in Certificate Three in Community Services. Because I'm more internet savvy than others, I tend to do the research and print it out for them. Because I'm here I can do it, because I haven't got a printer at home.*
>
> *I was still doing a little—I think it was the MYOB actually, while I was here, I was doing it at TAFE, so it was not anything that correlated with QuickBooks….*
>
> *I don't know where I got the idea that I'm alright with that, except with people from here…my work fellows. Not the people who are here to learn. Obviously, I know more than they do.*
>
> *I haven't done anything with computers before I started at a TAFE course, so it's interesting for me to see where I am. When I first started here, it was a little bit intimidating, going into a new place. They are all training people, so you think— they must be really good and stuff like that. Then I realised that I am better than a few of them. It's just interesting to me.*

These aspects of the Vocational emphasis of the (Community) Service Learning conception are highlighted in the respondent mind map in Figure 6-12.
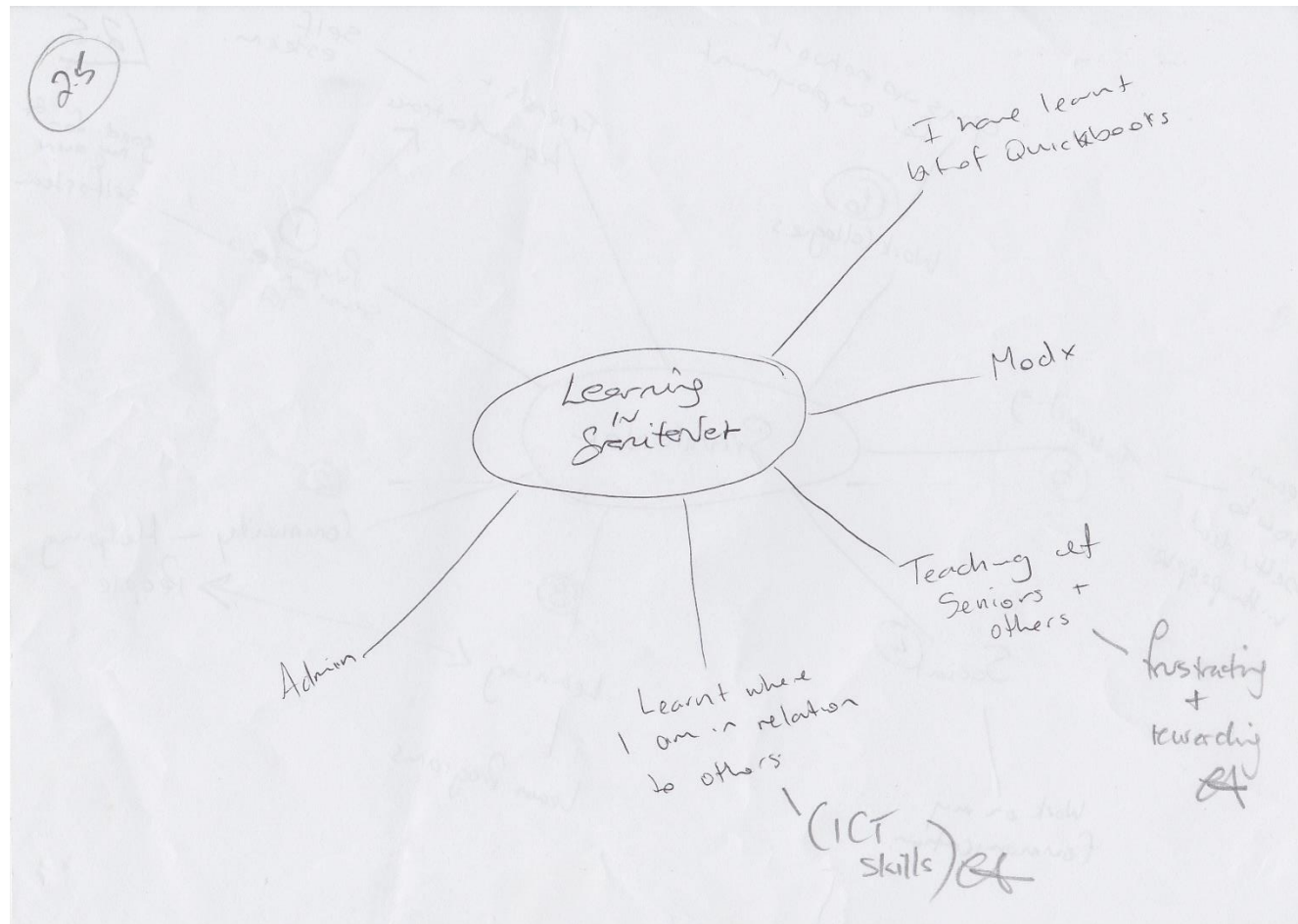
Figure 6-12   Mind Map 2.5 of Learning in GraniteNet: Vocational emphasis.

The conception of learning in the Vocational emphasis of the (Community) Service Learning conception is illustrated in Figure 6-13, linked to the three learning aspects in the study's holistic conceptual framework, grounded in the experience of learning as a "two-way street" but illustrating an expanded awareness of personal learning linked to vocational goals as "a two-way street" with signposts.

A two-way street with signposts

Teaching people how to reach out to a new technology

Everything you never thought you would do

Everything I'm learning here is relevant

I try to get as much feedback as possible on everything I'm learning…

Learning here is all of us teaching each other

Learning in GraniteNet

a network for employment

It's interesting for me to see where I am

teaching is learning

a social network

a family

Learning context and environment

Community service workplace

Category 2B: Service Learning – Vocational Conception

Figure 6-13 The conception of learning in the Vocational emphasis linked to the three learning aspects in the study's holistic conceptual framework and illustrating an expanded awareness of personal learning linked to vocational goals.

6.4.3. Learning in the Leadership emphasis as personal and organisational leadership learning

The conception of GraniteNet in the Leadership emphasis of the (Community) Service Learning conception is constituted by a conception of GraniteNet as a "family" and "a social network" shared with the Altruistic and Vocational emphases, but with an focus on GraniteNet as an organizational entity with a past, present and future, dependent on generation of income and partnership activities for longer term survival as "risky business". As such, the conception is infused with a strong sense of ownership, personal attachment to and identification with the organisation, including concern about its vulnerability and ongoing sustainability.

> *So GraniteNet is a social enterprise because that's where I see it now, which is highly dependent on volunteers so volunteers everywhere, which I think is my biggest concern in terms of its sustainability….*
>
> *Where is the next dollar coming from? "Where is the next buck coming from?" as I wrote.*
>
> *It was risky in that I could see that they had no idea of where the money was coming from so it was taking a risk in that sense.*
>
> *I was personally responsible and had a lot of involvement in project management and I wanted to see it succeed, so I certainly had ownership issues….*
>
> *Creating the fact, that it has become very much part of me— GraniteNet. I leave here and I am still doing things for GraniteNet or thinking about GraniteNet, whatever; checking emails.*

Reflected in the Leadership emphasis of the (Community) Service Learning conception is learning to lead a community-based digital inclusion social enterprise with a focus on building organisational capability and sustainability as the intentional experience. Focal in awareness in this conception are steering the organisation toward achievement of its goals and management of the learning/working environment, human, physical and financial resources, and customer and community perceptions and expectations. Also thematised are GraniteNet's relationships with other community stakeholders and broader community perceptions of the organization and its services. A holistic awareness of GraniteNet as a community organisation, social enterprise, technology learning centre hub and community web portal is evident.

> *We are developing a few social gatherings in the building, which is really unusual. I didn't see that coming. It's been beneficial because it's introducing more new people to what we are and who GraniteNet is at the end of the day.*

> *The connections, we've barely touched the surface I feel, and the same with opportunity. We struggle so much to keep the door open every day and tick all the essential boxes we have to do, that there isn't much time at the moment to lift our head and do some work on strategic planning.*

These aspects of the Leadership emphasis are illustrated in the respondent mind maps in Figure 6-14 and Figure 6-15. In Figure 6-14, associations (mind map branches) reflect a focus on organizational governance and operations, dependence on volunteers and relationships with community stakeholders. In Figure 6-15, associations reflect a focus on service delivery and operations, dependence on volunteers and relationships with community stakeholders, with branches 1 and 4 reflecting an expanded awareness and valuing of the GraniteNet community web portal.
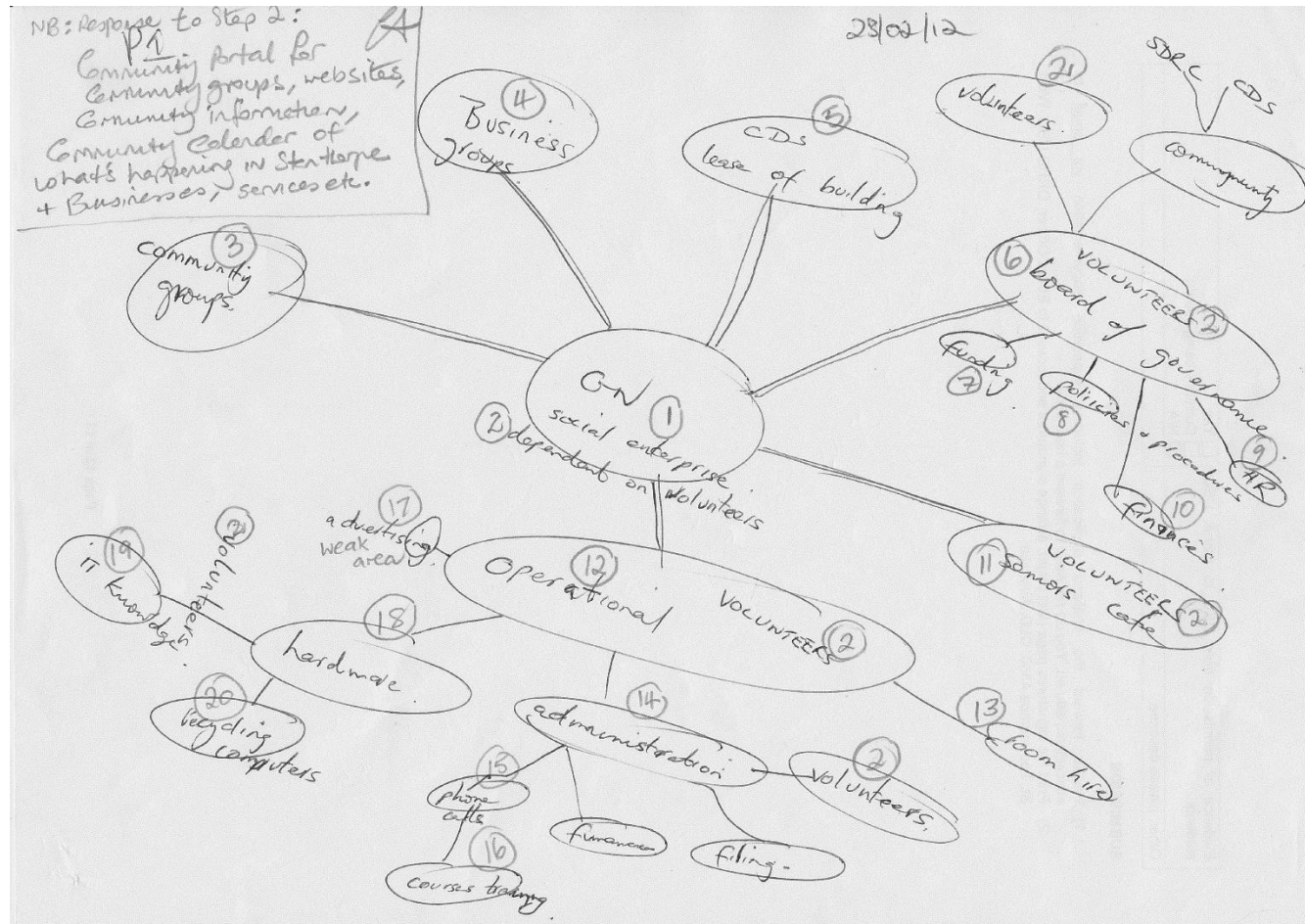
Figure 6-14   Mind Map P1 of GraniteNet: Leadership emphasis
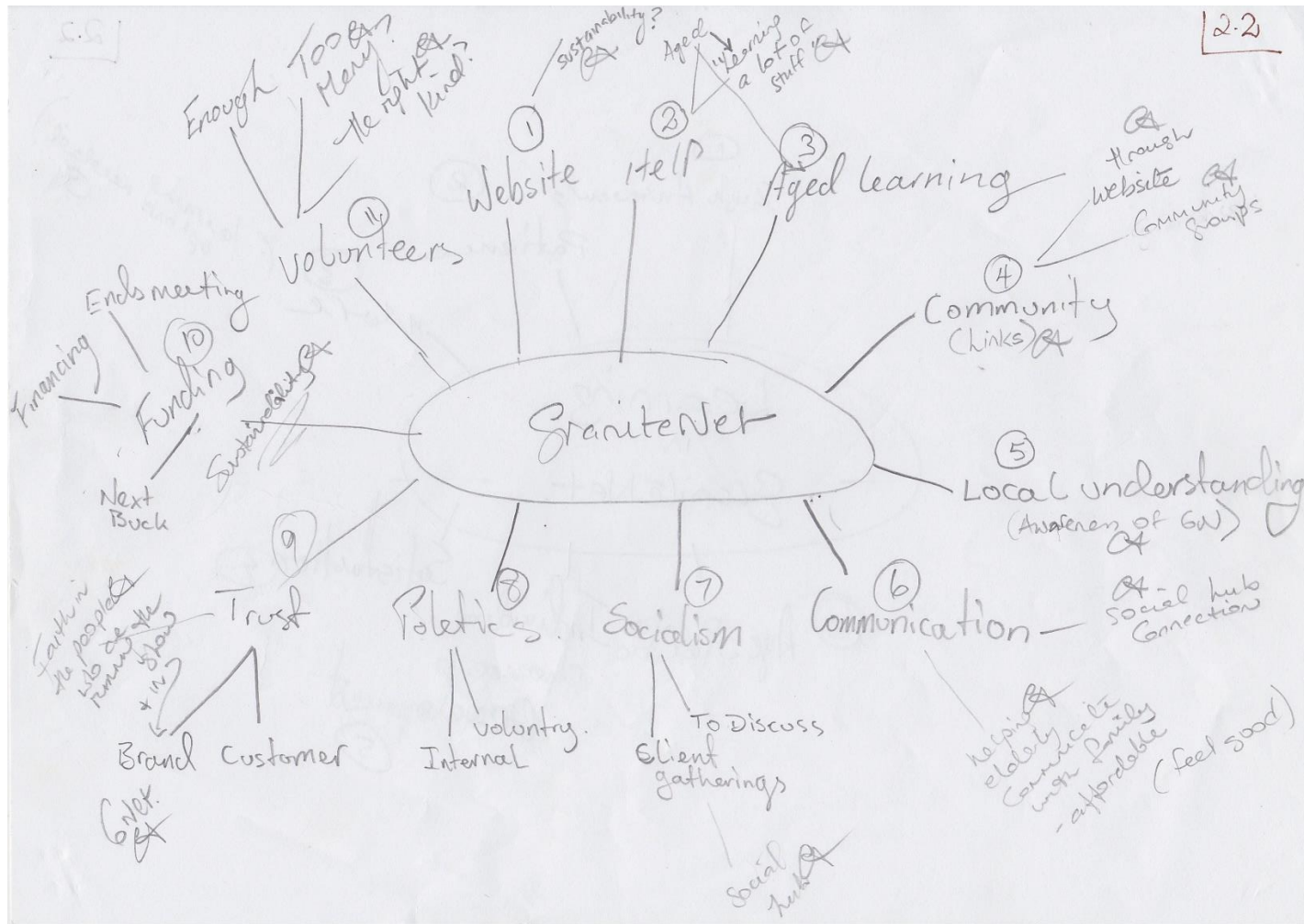
Figure 6-15   Mind Map 2.2 of GraniteNet: Leadership emphasis

6.4.3.1. *The experience in the Leadership emphasis of learning as a collective phenomenon*

The key learning questions in the Leadership emphasis are "What can we do? How can we do this?" Reflecting a conception of learning as a collective, collaborative phenomenon situated in the activity of leading the community organisation. In terms of a structure of awareness, this way of experiencing learning is inclusive of the "two-way street" conception in the Altruistic emphasis, whereby personal learning is undertaken primarily as a means to the end of making a contribution to the work of the helping organisation, with a strong focus on relational aspects. However, in the Leadership conception there is a stronger focus on the collective experience (what "we" are learning).

> *We're learning quite a bit, because we've branched out by letting out the space for other communities, that's where we're getting the income, from the church and selling the PCs. Most of the people that come in for learning, they don't get charged anything, because they're Seniors' Kiosk and they've got Seniors Cards and we're not making a lot of money that way.*
>
> *It's been a slow process, but we are getting there. All the time we are getting further and further and people are getting to realize that we are getting quite a good force together here to keep us rocking and rolling.*

Related to this, the focus of the respondent expanded second order perspective in the Leadership emphasis is related to developing an understanding of how GraniteNet is perceived by outsiders (other stakeholders and the broader community) as indicated in the following quotations.

Because I was President for six months, it actually gave me greater insight into other community groups and how GraniteNet integrates into them and how much GraniteNet is actually mentioned by them, which has been fantastic to see.

I think we have made great progress on the Community Notice Board and I think we are becoming more a place that people will consider looking for that general kind of community information. I think we have not been successful with this one—the local business sponsorship, I don't think—and I can't quite work out why the business community is not receptive or what aren't we getting in what we are offering them or able to deliver.

I think GraniteNet should do—try and promote it a bit more. There is no use promoting it on the website, because if you don't look at the web site in the first place, you don't know it's there.

6.4.3.2. *The experience of the learning process in the Leadership emphasis as collaborative, action learning*

As illustrated in the summary of key characteristics of conceptions in the Community of Practice Group in Figure 6-6, the experience of learning in the Leadership emphasis of the (Community) Service Learning conception is of "stepping up", with the learning frontier being organisational leadership.

I hadn't planned on doing something like that, but I felt, you know, it needed to be done and I could contribute something.

In this way of seeing and experiencing, learning is situated, intentional, incidental and collaborative, involving action learning and experimentation, requiring learners to take responsibility, assume leadership, and in doing so, also take significant personal risks:

I guess I was pleased to be asked to be the Secretary a year or so ago, because that shows that people feel that I can do the job which is gratifying.

The major lift in self-confidence which I applied, when I was voted in as President. I recall that I was running around for about two weeks, saying "Oh my god, what will I do?" But in all honesty, it's drastically helped me to become who I am now and I'm very happy with that person. Get up and go—it's got to be done eventually.

> *I think, probably pretty significant to me was realizing that I had the ability to steer GraniteNet's administration side which was pretty non-existent at the time…. I knew I had the ability and the experience to do it. I just needed the opportunity to step in.*

> *…it was a critical incident when I could see it going downhill and I was very concerned about it. I could see that it was falling apart because it did not have good direction and I suppose I was instrumental in bringing a number of issues to a head on the Board, to suggest that something had to be done— which wasn't pleasant. But it needed to happen.*

Whilst the experience of the content and processes of learning in the Leadership emphasis is inclusive of the conception of the content and process of learning in the Altruistic emphasis, there is a stronger focus in the Leadership emphasis on organisational leadership and management, with the experience of the processes and mechanisms of learning expanded to incorporate planned, collaborative action learning, inquiry and experimentation. Learning through experience, problematizing and having to "think outside your normal square" are also learning characteristics that are focal in awareness in this conception:

> *Learning more about how to help a not for profit organisation, such as GraniteNet, that's been a good learning curve for me. Learning that you have to think outside your normal little square.*

> *We are not getting people through the door for some reason—that was a significant thing of learning how we could alter the perception that had unfortunately become GraniteNet at the time.*

> *Learn to do things properly, how to run things and how to change the whole atmosphere. Learning that there are times that we really have to put our thinking caps on. That's when I realised the only way to go forward is to sort the mess out; is to know. And if I couldn't think of something, go and learn how. Learn: What can we do? How can we do this?*

The conception of learning in the Leadership emphasis of the (Community) Service Learning conception is illustrated in Figure 6-16, linked to the three learning aspects in the study's holistic conceptual framework. The content of learning is elaborated to show how leadership learning interfaces with and builds on learning across the content domains in the Altruistic emphasis.
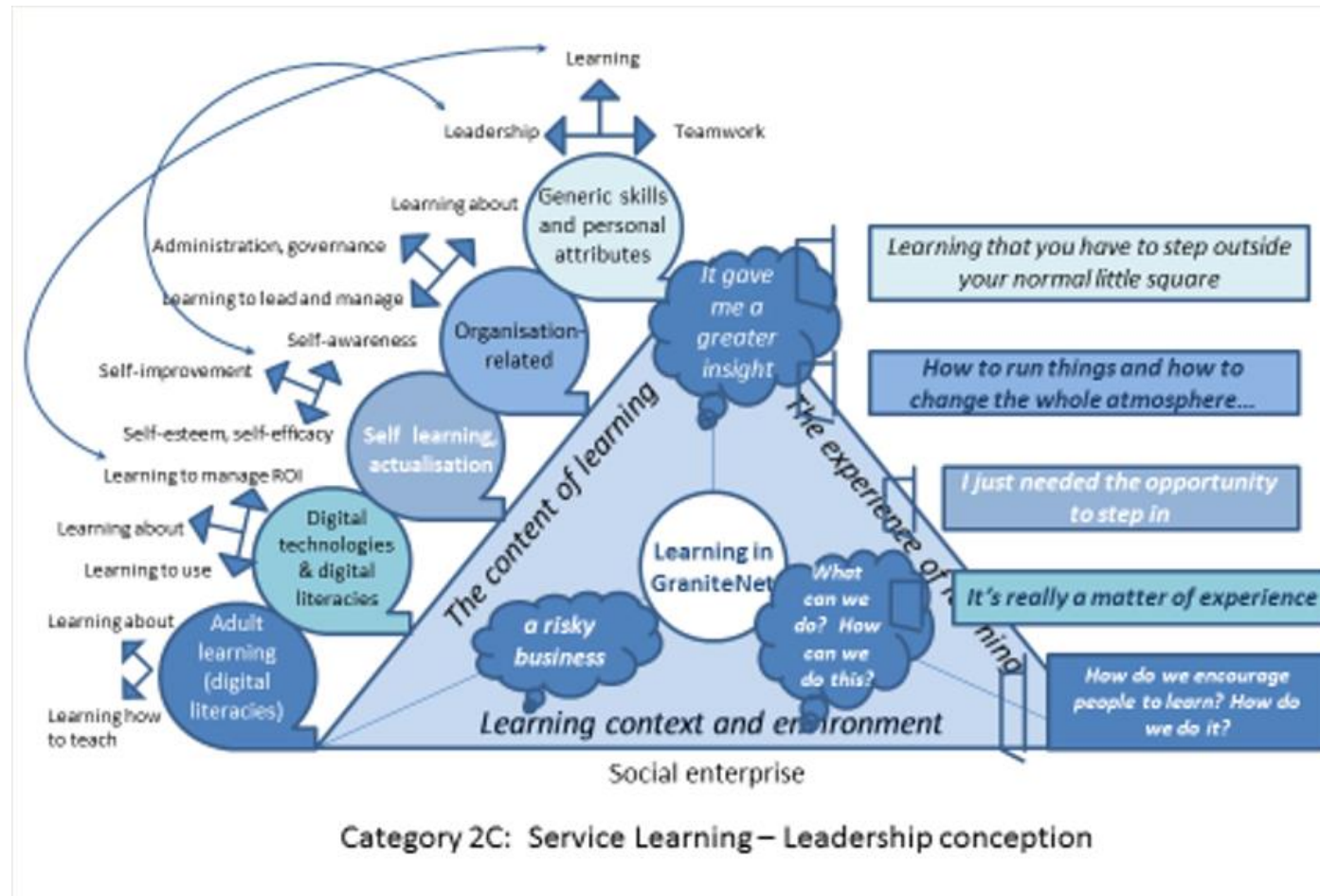
Figure 6-16 The conception of learning in the Leadership emphasis linked to the three learning aspects in the study's holistic conceptual framework.

6.4.4. Critical differences between conceptions of learning in sub-categories in the (Community) Service Learning conception and relationship to other categories

The three subcategories in Category 2 share a core Altruistic conception of GraniteNet as a community service helping organisation and community technology hub from a Provider perspective and also share an experience of learning as social participation in a community of practice, emphasizing relational and reciprocal aspects of learning as a "two-way street". Nonetheless, critical differences between conceptions of GraniteNet and conceptions of learning in GraniteNet are evident across the dimensions of variation in all three subcategories, as summarised in the table atAppendix X. In terms of a structure of awareness of GraniteNet as the learning context and environment, there are marked differences with respect to what is focal in awareness and thematised in each subcategory, and how GraniteNet is delimited from its context.

For example, the focus in the Leadership emphasis reflects an expanded awareness of all three 'GraniteNets' (that is, the community organisation, the community technology hub and the community web portal) and an increasing awareness of an outsider perspective of GraniteNet, differentiating it from conceptions of GraniteNet in the Vocational and Altruistic emphases. With respect to differences in the experience of learning in GraniteNet, the focus in the Vocational emphasis on building and monitoring individual capability relevant to vocational goals and competencies differs from the focus on collective and organizational learning and development the Leadership emphasis, as illustrated in the learning frontier for each conception in the table. With reference to the conception of digital technologies, the "digital native" perspective reflected in the Vocational conception differentiates it from both the Altruistic and Leadership emphases, both of which reflect a conception of digital technologies from the perspective of a "digital immigrant" (Prensky, 2001, p. 2).

6.5.　　The Communities of Interest Cluster.

The Communities of Interest Cluster comprises the Community Information Literacy/Social Inclusion conception (Category 3) and the Blended Community Learning conception (Category 4). As illustrated in the outcome space diagram in Figure 6-1, these two conceptions are complementary, yet distinct conceptions of learning characterised by a focus on activity situated in the virtual environment of the community web portal—the domain of GraniteNet's diverse communities of interest—as distinct from the face-to-face environment of the community technology hub. As such, the Communities of Interest Cluster represents the community group Content Editor perspective of learning in GraniteNet and a dual "Customer-Provider" perspective of GraniteNet as the learning context and environment. Key characteristics of the two conceptions in the Communities of Interest cluster are summarised Figure 6-17 and are elaborated in the descriptions in the following sections with reference to participants' interview responses and mind maps.

Figure 6-17   Key characteristics of conceptions in the Communities of Interest Cluster.

6.5.1. The Community Information Literacy/Social Inclusion conception

Learning in the Community Information Literacy/Social Inclusion conception involves learning about and learning to connect with the local community using the GraniteNet community web portal, which is seen and experienced as a community noticeboard for local community groups (Communities of Interest)[107] and as a lifeline for marginalised community members and newcomers to town. The learning frontiers for this conception are, firstly, the local community and secondly, digital community information literacy. The key learning questions are, "What is out there for me?" "Where do I go?" "Who are the people to see?", "How do I work this?" and "What information do people need and how do they need it to be presented?" Focal in awareness in this conception of learning in GraniteNet is using digital technologies and specifically the GraniteNet community web portal to learn about, learn how to connect with and learn how to participate in the life of the local community:

> *It's a community listing of all of the facilities that are available in Stanthorpe…A one-stop-shop for community information. We have the community calendar that tells us what's happening in Stanthorpe through the day—lots of information about what's going on in our community*
>
> *My mud map of what's happening in Stanthorpe, as a newcomer.*
>
> *What is happening in the world? It offers a way to communicate; it offers a way of getting information….It's a way of bringing the community together.*
>
> *Community access; helping others. Internet access because if you can't afford a computer, it's a place where you can go for a reasonable price and get on. Teaching others how to use a computer, training of older people, to actually be able to use the computer and what they should be looking for. Computer repairs and computer sales; if you can't afford the big stuff.*

According to this way of seeing GraniteNet, and learning in the context of GraniteNet, digital technologies are experienced as a medium for accessing and communicating information about the local community, particularly for people who are marginalised and may have difficulty accessing and using information, and the

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[107]   The term Communities of Interest is used to refer to local community groups and organisations with a presence on the GraniteNet community portal. Members of these community groups assuming.

tools and facilities needed to do so, using traditional or mainstream channels. As such, there is a strong focus on accessibility of digital technologies, digital expertise and community information for social inclusion.

> *A lifeline for people who maybe can't get out of their own home.*
>
> *What is happening in the world? It offers a way to communicate; it offers a way of getting information.*
>
> *Also if there's a problem, it's a way of telling the community—if you need help, this is here. It's more than just spreading it out there, it's a way of communicating what is available to anyone.*
>
> *It's a way of bringing the community together.*
>
> *Community access; helping others. Internet access because if you can't afford a computer, it's a place where you can go for a reasonable price and get on. Teaching others how to use a computer, training of older people, to actually be able to use the computer and what they should be looking for. Computer repairs and computer sales; if you can't afford the big stuff. Easy access….Availability—you can get on and look at their site at any time.*

The emphasis is on using digital technologies, including the GraniteNet community portal, to access and share community information, with development of community knowledge and digital and community information literacy skills for social inclusion focal in awareness. Public access to digital technologies, digital information and digital expertise via the community technology hub is also thematised. As such, there is a strong focus on public accessibility of digital technologies, digital expertise and community information for social inclusion, with a strong welfare focus.

> *It's not just a service, it's a way of having a lifeline for people who maybe can't get out of their own home…what's happening, the community news, that sort of thing.*
>
> *Also if there's a problem, it's a way of telling the community—if you need help, this is here*
>
> *Then, for "public learning", to me, GraniteNet—the body that it is, is about providing information into the community through its website, but also providing a lot of internet or computer support. For the people in the public who want to learn about it, who do you know is the useful person? Who are the tech experts to talk to?*

The annotated respondent mind map in Figure 6-18 illustrates this conception of GraniteNet. Associations 1, 3, 11, 12, 13 and 14 reflect a focus on community information via the GraniteNet web portal, with access for marginalized and disadvantaged to technology services and expertise at the GraniteNet premises also thematised, reflected in associations 2, 4, 5, 6, 7 ,8 ,9 and 10.
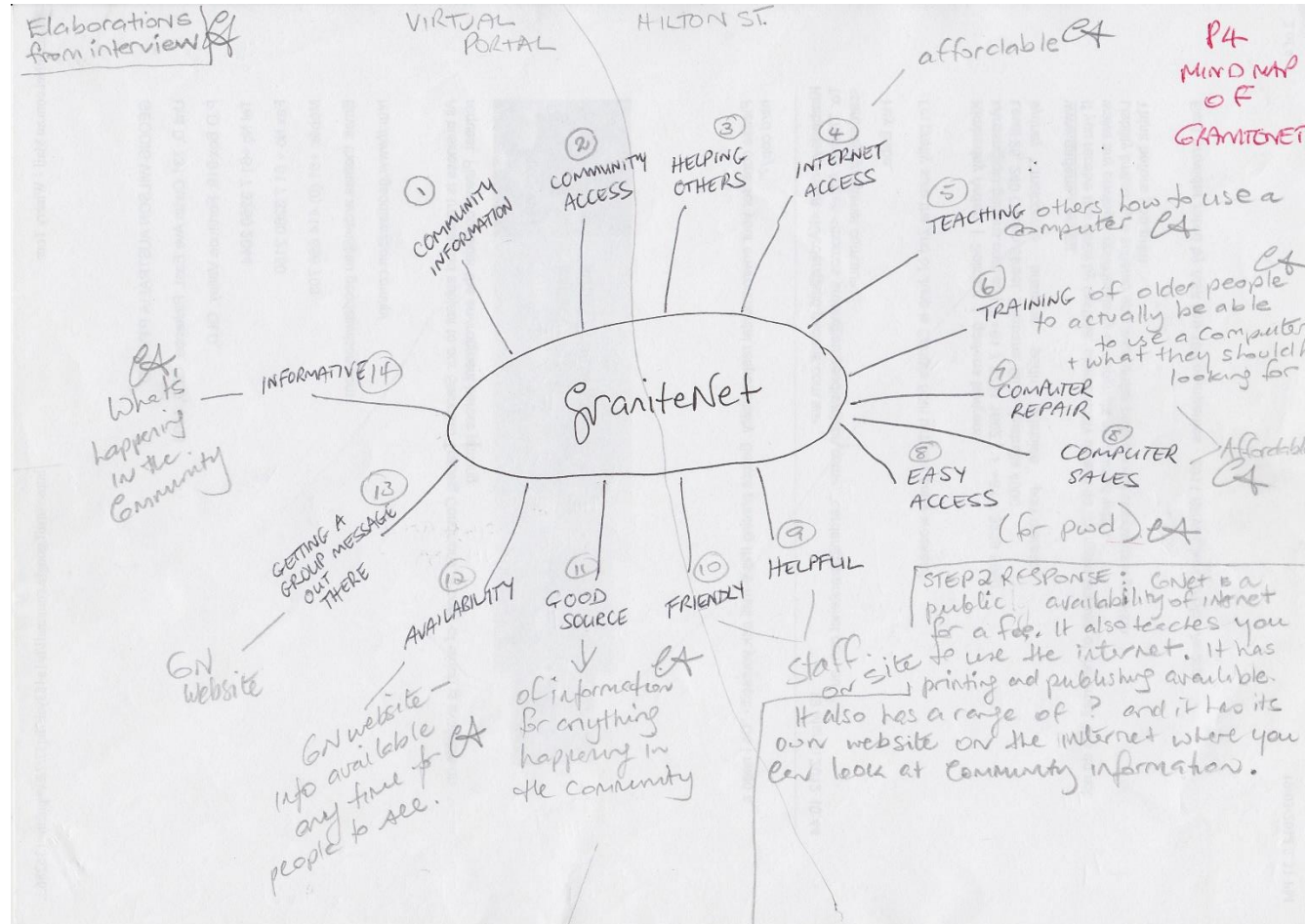
Figure 6-18   Mind Map P4 of GraniteNet: Community Information Literacy/Social Inclusion Conception.

6.5.1.1. *The experience of learning in the Community Information Literacy/Social Inclusion conception as "learning my community"*

Learning in this conception is experienced as a process of learning to navigate the terrain of the local community using digital technologies and, in turn, using this knowledge and these skills in combination with digital and community information literacy skills to help others to do the same. As such, learning is experienced as an ongoing process of discovery of information and acquisition and cultivation of community knowledge, skills and literacies.

> *The actual tourist information isn't what you need when you move to a community. You need a community information board like that is and you can look at it….Tourist information just tells you where you go to spend your money. The community information tells you where in the community things are and you need that information in small communities for newcomers.*
>
> *You can see on the front page we have lots of information about what's going on in Stanthorpe community. Various, different, little articles of interest to the community. You see—get on there and see what's happening in Stanthorpe – all sorts of things that are going on. If you want to join a group you can find out what the membership requirements are. You can find the contact details for those groups.*
>
> *I looked at it and decided I didn't like it. I didn't like the fact that it was so tight. It was so hard to read and even I had trouble reading it.*

This conception of learning in GraniteNet is reflected in the associations in the respondent mind maps in Figure 6-19 and Figure 6-20 on the following pages. Associations (branches) 1, 2, 3 and 6 in Figure 6-19 reflect a focus on accessing community information and connecting with the local community via the GraniteNet portal, while in Figure 6-20, associations 1, 5, 7 and 11 reflect a focus on digital literacies and 3, 4 and 9 community information literacies.
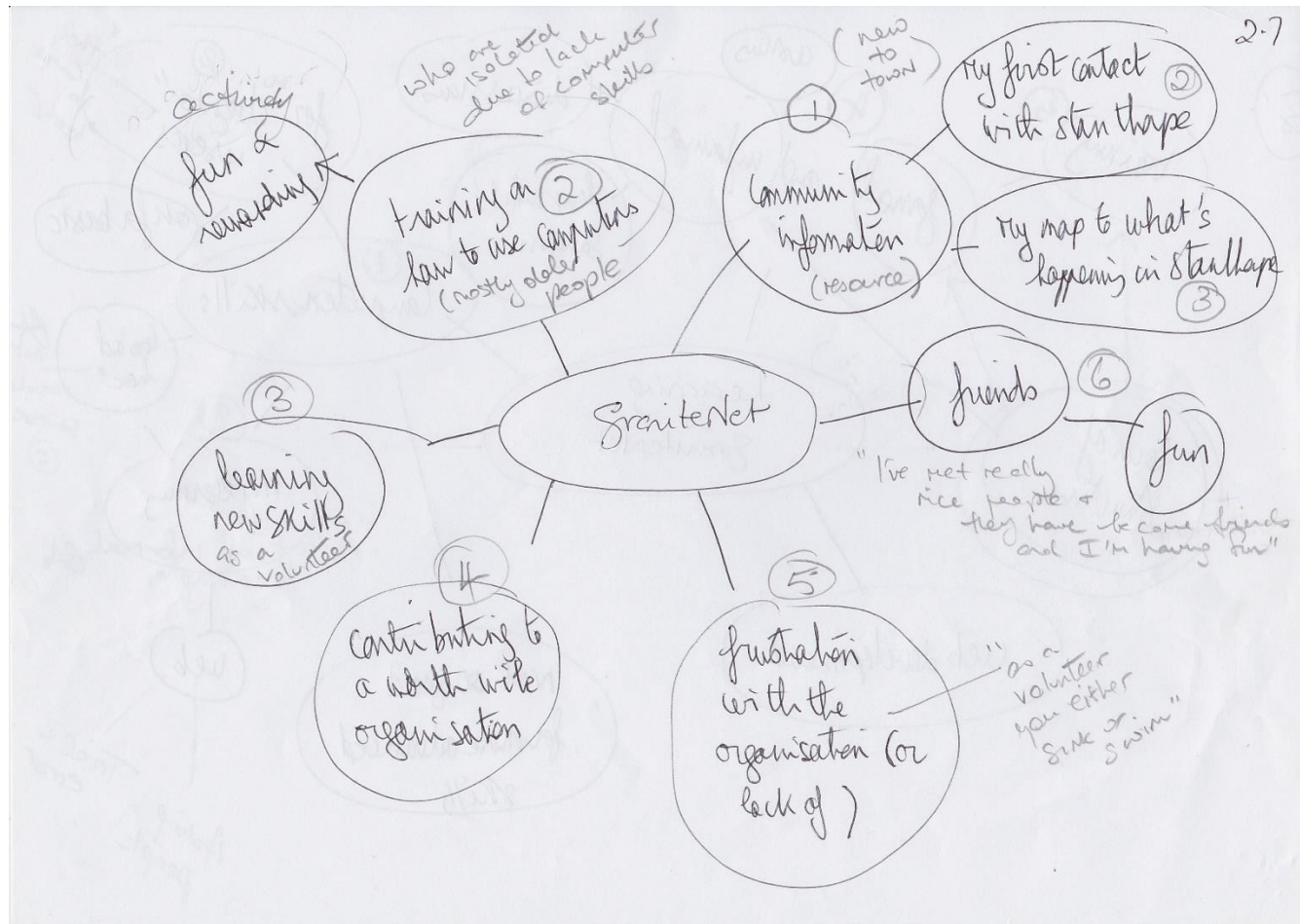
Figure 6-19   Mind Map 2.7 of GraniteNet: Community Information Literacy/Social Inclusion conception.
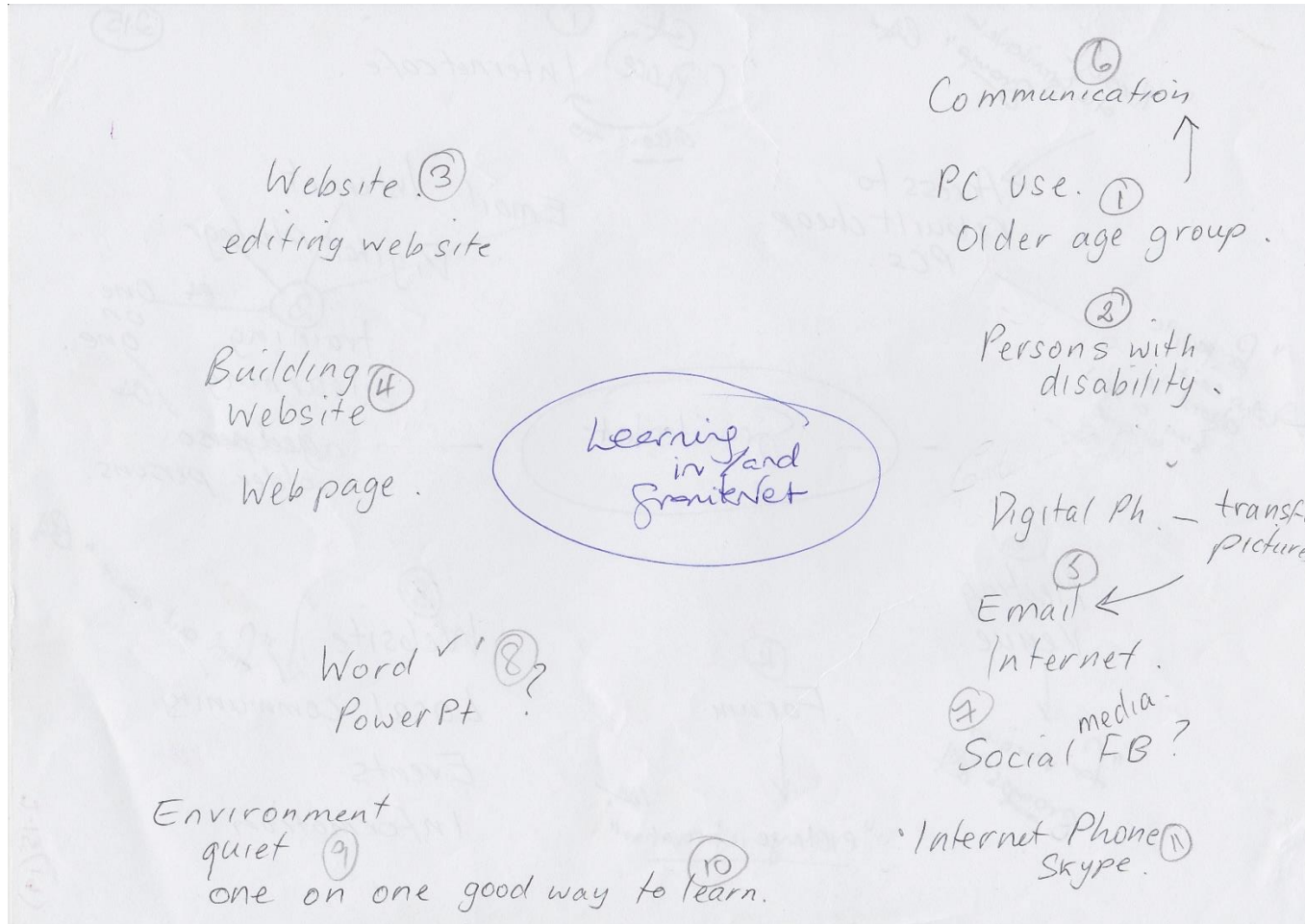
Figure 6-20   Mind Map 2.15 of Learning in GraniteNet: Community Information Literacy/Social Inclusion Conception

The conception of the learning content in the Community Information Literacy/Social Inclusion conception includes learning in the following four related content domains as literacies:

- Local community knowledge.

  What community services [are] out there? Places to get help…

  Where in the community things are… where to go for things.

  There's a local doctor here, that's the only one that bulk bills. There's chemists—there's only two of them in town.

  To tell people how to contact us.

  Where you can go for a reasonable price and get on [to the internet].

  Can get on a computer and talk to someone.

- (Digital) community information literacy (CIL): learning about your own and other people's information needs and how to access, evaluate, create and share community information with others (including in accessible formats).

  I think the main thing is that we want people to be able to understand what we really do in a simple way that they can understand.

  It needs to be simple. You've got to use the "KISS" principle for people. You don't need to make it big words and that.

  You know, it's just like "a picture paints a thousand words"…because it's much clearer.

  You want to go to the section you're interested in…they want to know the information that they want to know.

- Digital literacies: learning about and learning how to use digital technologies for these purposes.

    How to use a computer…

    Where you can look up community information.

    Set up a newsletter and email it out.

    [Create] a "useful links" page…put links in there.

- Foundation literacies: building and drawing on a solid foundation of basic literacy skills.

    You develop a level of competency in literacy.

    You really need to make sure you're on top of reading and writing and everything in between.

    Literacy is the starting point whether it's reading literacy or if it's digital literacy.

    I am a reader, I am in a couple of Book Clubs—I read a lot. I feel very confident about my communication skill.

Specific learning content in these four domains of learning is elaborated in the table at Appendix Y, supported with quotes from the interview transcripts in which this conception of the content of learning in GraniteNet is articulated. A developing awareness of the information needs and experiences of others is highlighted as the respondent expanded second order perspective in this conception. The conception of learning in the Community Information Literacy/Social Inclusion conception of learning in GraniteNet is illustrated in Figure 6-21 linked to the three learning aspects in the study's holistic conceptual framework and elaborating the conception of the learning content and process as a virtuous cycle of community information literacy for community engagement and social inclusion.
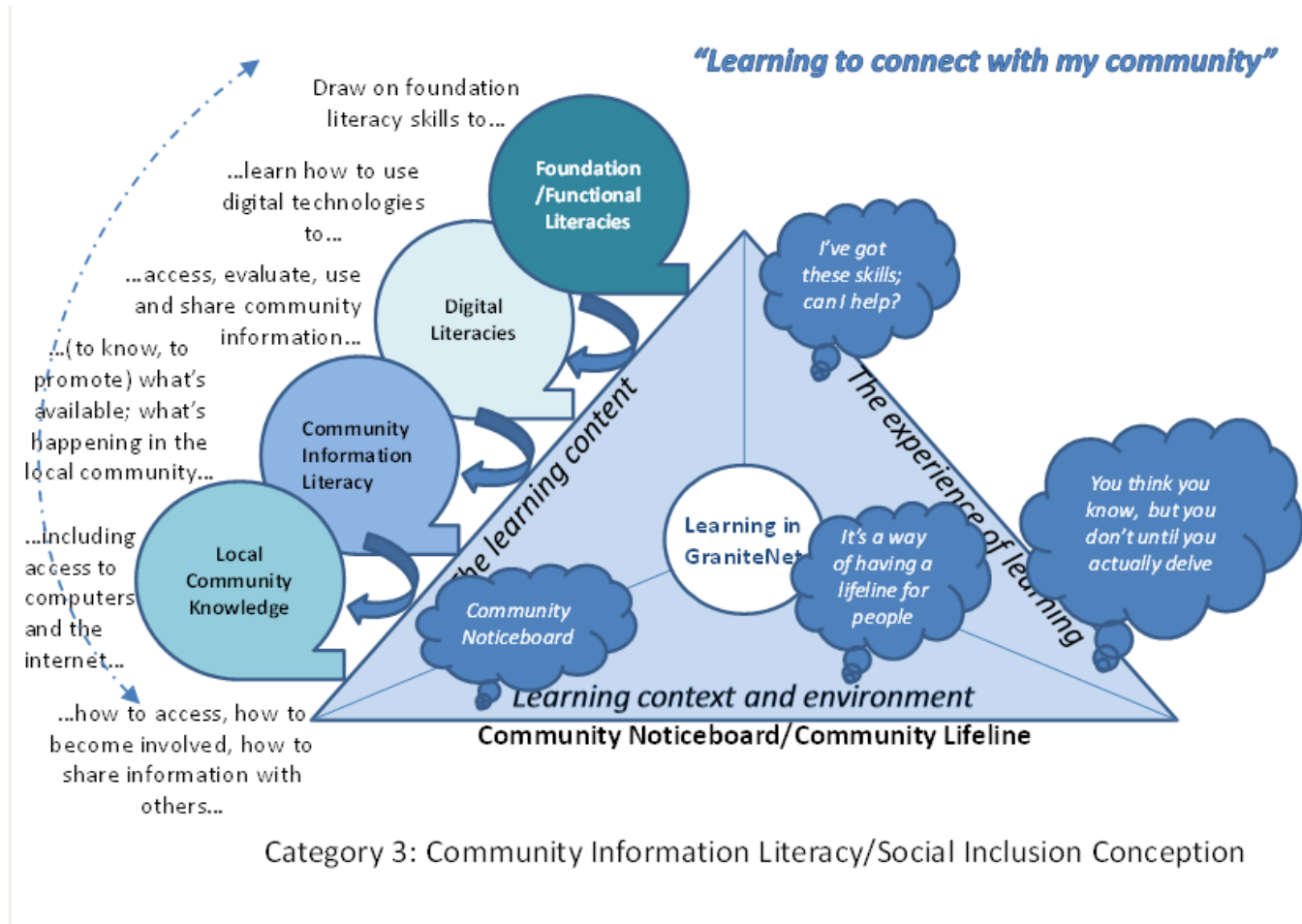
Figure 6-21 The conception of learning in the Community Information Literacy/Social Inclusion conception of learning linked to the three learning aspects in the study's holistic conceptual framework.

6.5.1.2. *Using the structure of awareness to differentiate the conception of learning in the Community Information Literacy conception from the conceptions in Categories 1 and 2*

The Community Information Literacy/Social Inclusion conception of learning in GraniteNet in Category 3 is clearly distinguished from conceptions in Categories 1 and 2 in the first instance by its structure of awareness of GraniteNet, as the learning context and environment. Whilst GraniteNet's community technology hub is focal in awareness in the Frontier Learning and (Community) Service Learning conceptions, the GraniteNet community web portal is focal in awareness in this conception. Also, the focus of learning in the Frontier Learning conception is learning about and learning to use digital technologies with the object of learning being development of personal digital literacies for the purpose of participating in "life in the digital age", with an emphasis on communicating and connecting with family and friends.

In contrast, learning about and learning to use digital technologies in the Community Information Literacy/Social Inclusion conception has a dual purpose: firstly, to learn about and connect with the local community oneself, and secondly, to be able to share community information with others in the interests of social inclusion. Therefore, although a sense of digital inclusion for social inclusion implies some commonality with the Altruistic emphasis in Category 2 (Community Service Learning—Altruistic conception) in the sense of a "lifeline" for people who are socially isolated, in this category the focus is very much on using the available digital technologies to enhance connection to the local community through the sharing of community information via the GraniteNet community web portal rather than connecting with family or becoming part of the GraniteNet "family" via face-to-face engagement with others at the community technology hub.

Dimensions of variation and critical differences among these conceptions of learning in Categories 1, 2A and 3 are summarised at Appendix Z.

6.5.2. The Blended Community Learning conception

In the Blended[108] Community Learning conception, GraniteNet is experienced primarily as a mechanism for supporting local community groups or Communities of Interest (CoI)[109] through the provision of access to a free, self-administered webpage and dedicated email address for these groups on the GraniteNet community web portal and also to free Content Editor training and technical support. An expanding awareness of the affordances of GraniteNet and of the broader digital environment for communicating and interacting with proximate and distributed communities and networks of interest is evident, differentiating this conception from the Community Information Literacy conception, which it subsumes.

> *GraniteNet exists to support the community groups—the local web page where any community group can have their information on up-coming functions and you can have a free email address. It is not an Internet Service Provider, because that's what lots of people still think it is. I can show them examples of some of the community groups on it.*

In terms of a structure of awareness, therefore, the Blended Community Learning conception in Category 4 is inclusive of and expands on the Community Information Literacy/Social Inclusion conception in Category 3. As is the case for the Community Information Literacy/Social Inclusion conception, learning is situated in participation in the associational life of the local community, however in the Blended Community Learning conception there is a stronger affiliation with one or more local Communities of Interest reflected in the data, and specifically, in the practices of the GraniteNet website Content Editor[110] role. Community

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[108]   This term is an adaptation of the term "blended learning" used in higher education settings to describe a hybrid of face-to-face, normally classroom-based learning and online learning (Bonk & Graham, 2006). It is used here to signify learning in the context of GraniteNet that is situated in proximate and distributed communities and networks of interest operating in both physical and virtual, or hybrid, environments

[109]   In total, 11 individual community groups are referenced by respondents in the interview transcripts. To protect respondents' anonymity, community groups have been labelled alphabetically (A-K) in the quotations supporting the description of this conception.

[110]   The GraniteNet Content Editor is a role assumed by a representative of a local community group with a webpage on the GraniteNet community portal and is described in further detail in the case study description in Chapter 4.

bloggers[111] linked to one or more communities of interest, are also represented in this category.

> *For me, the biggest thing is the [GraniteNet] website and most of this all belongs to the website and that's the bit that interests me and the community groups are the crux of it and then linking the community groups with volunteers and people who are interested.*
>
> *The biggest is a web presence. When GraniteNet first started, it gave us a chance to have GraniteNet as a website, which then allowed us to put our [Community Group A] onto the [National Community Group A] network and of course, when you have a web presence, wherever you are in the world, you can look up Granite Net and you can find what [Community Group A] is doing here in Stanthorpe. I thought that was absolutely a wonderful idea. Along with that came the opportunity for us to have an email address on Granite Net. The highest benefit I see for GraniteNet for me—and this is for both [Community Group A] mainly because it is a service to [Community Group A]—but also education generally and providing a community site.*

Learning in this conception involves learning whilst contributing to the local community group, club or organisation or CoI—and through that, to the local community, with the GraniteNet community web portal and its affordances for promotion of the CoI and communication with group members focal in awareness. Also thematised is an affiliation with one or more local community groups and the affordances of a presence on the GraniteNet community portal for promoting community groups, connecting, linking volunteers and other interested people with these groups, and for communicating with group members. The annotated respondent mind map in Figure 6-22 reflects the Blended Community Learning conception of learning in GraniteNet in Category 4. Associations 2, 3, 6 and 12 in the mind map of GraniteNet all reflect a conception of GraniteNet as "a place to do all those community things."

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[111]   Information about GraniteNet's community bloggers is provided in the case study description in Chapter 4.
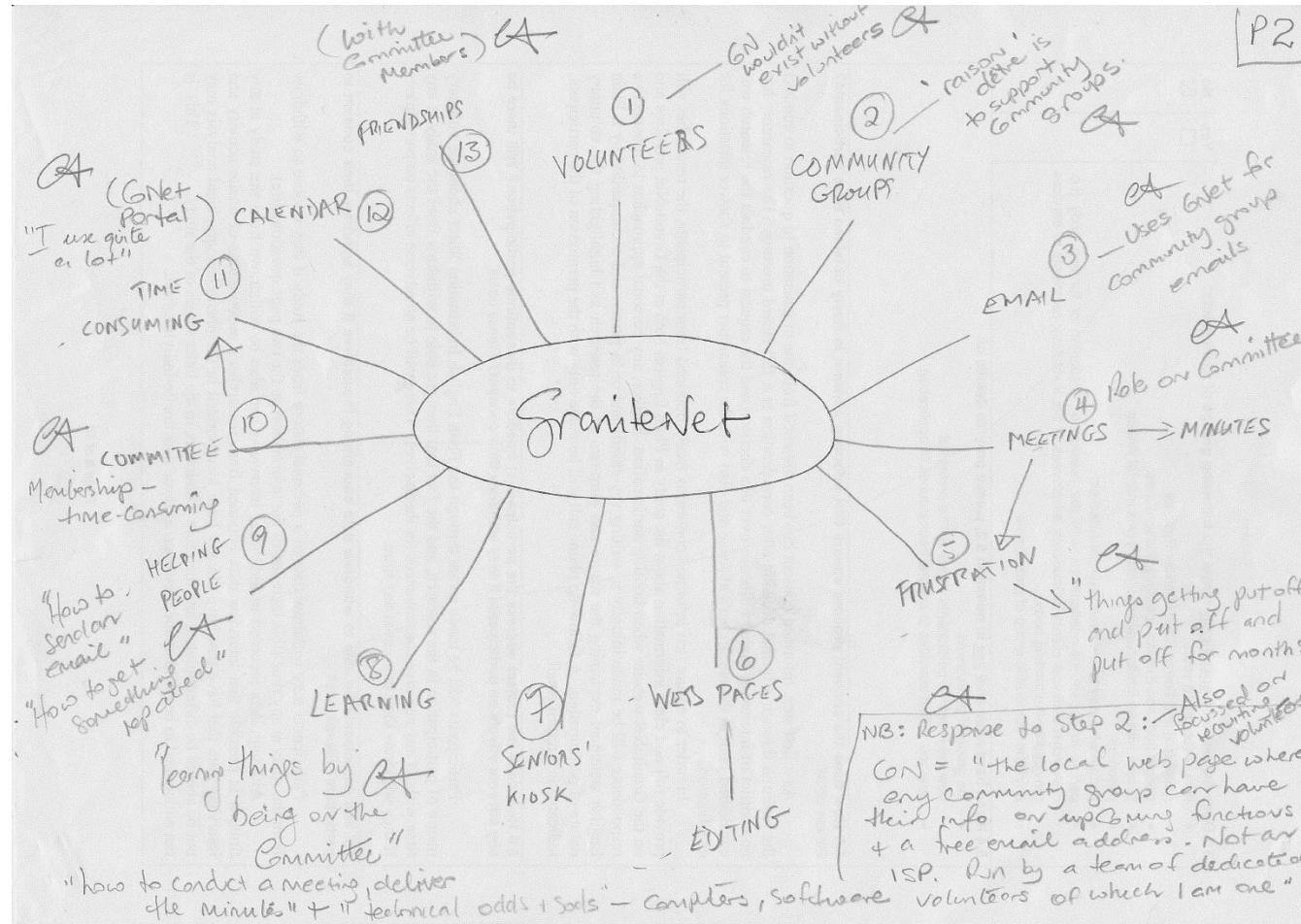
Figure 6-22 Mind Map P2 of GraniteNet: Blended Community Learning Conception

Learning in the Blended Community learning conception as learning to be a community group Content Editor, learning in the specialised domain of the Community of Interest and learning in community with others. With respect to the conception of the learning content in the Blended Community Learning conception, a primary focus is on learning to be the Content Editor for one or more community groups, which involves creating, uploading and updating content on the group's webpage using the ModX Content Management System (CMS) and managing communications for the group/s on the GraniteNet community portal.

> *Doing the course in the first place to become an Editor of the site…that's probably one of the biggest learning activities.*
>
> *In the case of the community groups, I wanted to help them and it is a good skill to have anyway.*
>
> *For [Community Group D], I took it upon myself to create the webpage and to set it up and also to include a little bit of a pictorial …It was fun to do and a learning exercise for me and also I had fun putting it together and learning as I went. This was a couple years ago. I just had fun putting it together and hopefully encouraging people to consider the [Community Group D] as something to come along and have fun with.*
>
> *As a lot of groups didn't know how to do it, and also as I'm involved in the [Community Group D], and their webpage, I realised that it was completely out of date. I thought, "Oh well, that is something that I can do for them" I really wanted to learn how to do it. It's a good skill to have.*

Other areas of focus include developing knowledge and skills in the specialised domain(s) of the community or communities of interest and building capability to participate in and facilitate blended community learning.

The learning, you know that could be the same thing—it's not just taking a photo of your dog. It could be people doing something useful in the community, sharing their skills while they are practicing their skills….

By getting other people involved, it's also enabling new people to learn and it's also giving the initial people an opportunity to teach perhaps.

That is where I think, instead of people sitting in little groups and saying, "Okay we are just going to sit here and do what we like doing", to think more outside and how they can connect with others and then share their skills."

The thing is people are so specific about the things they want to learn about. I like learning about web stuff and gardening and canning and preserving and permaculture….

The annotated respondent mind map in Figure 6-23 illustrates aspects of this experience of learning in GraniteNet, with the association in branch 1 reflecting a focus on training for the Content Editor role and the problems related to conflict of interest between doing the grass roots work for one's Community of Interest and editing the group's webpage on the GraniteNet portal.
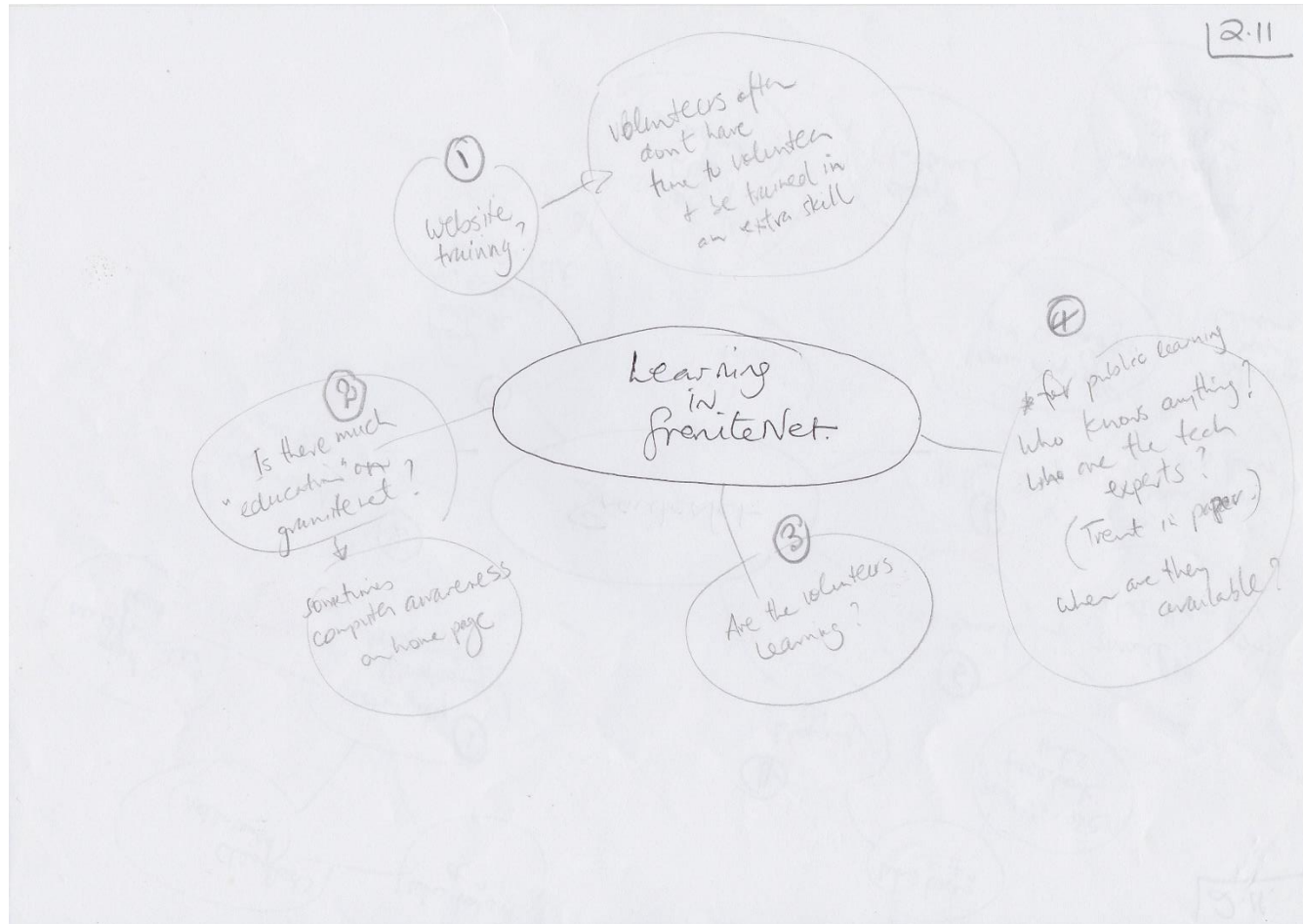
Figure 6-23   Mind Map 2.11 of Learning in GraniteNet: Blended Community Learning Conception

6.5.2.1. *Specific learning content in the Blended Community Learning conception*

As is also the case in the other categories, learning about one's own use of digital technologies and how to manage one's own digital literacy learning is also thematised, however the emphasis in this conception is on developing conceptual knowledge and understanding of how digital technologies work, how they can be used to enhance practice, and of one's own capabilities and limitations and how to manage and prioritise one's own learning related to digital technologies. In this way of seeing and experiencing, the content of learning can therefore be organised into the following four broad areas:

1. The GraniteNet Content Editor Skills Set.
2. Knowledge and skills in the specialized domain of the Community of Interest.
3. 'Blended' community learning.
4. Digital meta-learning.

Each of these content domains is elaborated in the table at Appendix AA, supported with reference to extracts from the interview transcripts articulating this conception of the content of learning in GraniteNet. With respect to the conception of the content of learning, the affordances of the GraniteNet portal and digital communications technologies for supporting communications and sharing of information and knowledge in the specialised domain of the Community of Interest are also thematised.

6.5.2.2. *How learning occurs in the Blended Community Learning conception*

The experience of learning in this conception is of a multi-layered, multi-faceted and multi-dimensional phenomenon, comprising various learning processes and mechanisms, and situated in a blend of face-to-face and digital environments, including:

- Practical learning—procedural, experiential and cultivation of requisite literacies

    We had training from [Kate] and then it really just was a matter of practice.

    Sometimes you click on something and "Oh, look at that!" When I first learnt, I did have a walk-through and I do have that on a shelf somewhere and it just had a few steps on how to do things… Sometimes you just have to go backwards and forwards and think, "Have I done this?" or "I'll go check this" and I'll go back."

    I actually did a little photo "expose" of a particular meeting that we went to where was some really gorgeous colours and what-not.

    One thing I always question is, "who looks at it?" And there is always that concern or worry that is it all for naught: Are you doing anything useful with having that information?

- Network learning

    …and it might be that the group is doing genealogy, and you might have your genealogy stuff all on there that you could get through that group. There might be a blog where people are saying, "Oh, did you know that you could go here—here— here and find this information about this" and say "Guess what I've learnt today!" So it's a community of learners about a particular interest.

    …then linking the community groups with volunteers and people who are interested. Letting people know about all the different community groups here—both the local and new people in town….

    Often you are doing things that at least a few of your friends are interested in, so it's easy to build things up like that.

    Every week, they post something and it's not re-posting something they have learnt somewhere else. They are actually creating knowledge and resources and sharing it. They are one of the few people that I follow, that don't just recycle.

- Blended community learning

  To interact with the community in groups and things like that….When you are interacting with other people, you always learn stuff anyway.

  I'm involved with the local [Community Group H], but I'm also involved online. We have an email list and we are always talking about different things and asking each other questions if we get something on Health Line and we have no idea about. We are always asking each other and learning from those more experienced counsellors.

These learning processes and mechanisms are elaborated in the table at Appendix CC, supported with the quotations from the interview transcripts in which they are articulated. Figure 6-24 illustrates the conception of learning in the Blended Community Learning conception with reference to the three learning aspects in the holistic conceptual framework and elaborating the experience of the learning content and process.

Category 4: Blended Community Learning Conception

"La vie associative online"

Figure 6-24   The conception of learning in the Blended Community Learning conception linked to the three learning aspects in the study's holistic conceptual framework.

6.5.2.3.   *Awareness of the affordances of digital technologies for community learning*

With reference to the conception of digital technologies in the Blended Community Learning conception, there is an expanded awareness the world beyond the local community, of online communities beyond GraniteNet and that digital technologies can be used to connect people of a common interest and allow them to share knowledge and information, regardless of where in the world they happen to be. There is also an expanded awareness of the range of digital technologies and environments, and the scope of digital practices, for interacting and sharing information and knowledge with others, including blogging and social media. .

> *Using email is a technology to interact with the community in groups and things like that….*
>
> *I like what I had in [Community Group E]. I knew that I wouldn't be able to keep updating it, so I actually had a "News feed". I did a "Google" search for [relevant national news] and whatever and all this … news comes through and it's a sidebar and I think that's great, because even if I have put nothing in for a [really long time], there is always something current on the home page, which is really cool.*
>
> *I'll go on to the Blog [on the GraniteNet website. I do a Blog and then I use the 'Face Book' link. I put it on my Face Book page and I tell all my friends that this is what I have written about and they can comment on my Face Book page. That's another good aspect of what GraniteNet has.*

The annotated respondent Mind Maps in Figure 6-25 and Figure 6-26 illustrate this conception of GraniteNet and digital technologies. Associations in branches 1-5 in the mind map in Figure 6-23 reflect a focus on the community information dissemination aspect of GraniteNet and related digital technologies reflecting awareness of the community group Content Editor role, community Blogger role and links to Facebook. The associations in branches one through eight in Figure 6-24 reflect the primary focus on the community web portal and related digital technologies and an expanded awareness of their affordances for linking community groups with interested people and enabling online community interactions, include a reference to "local bloggers".
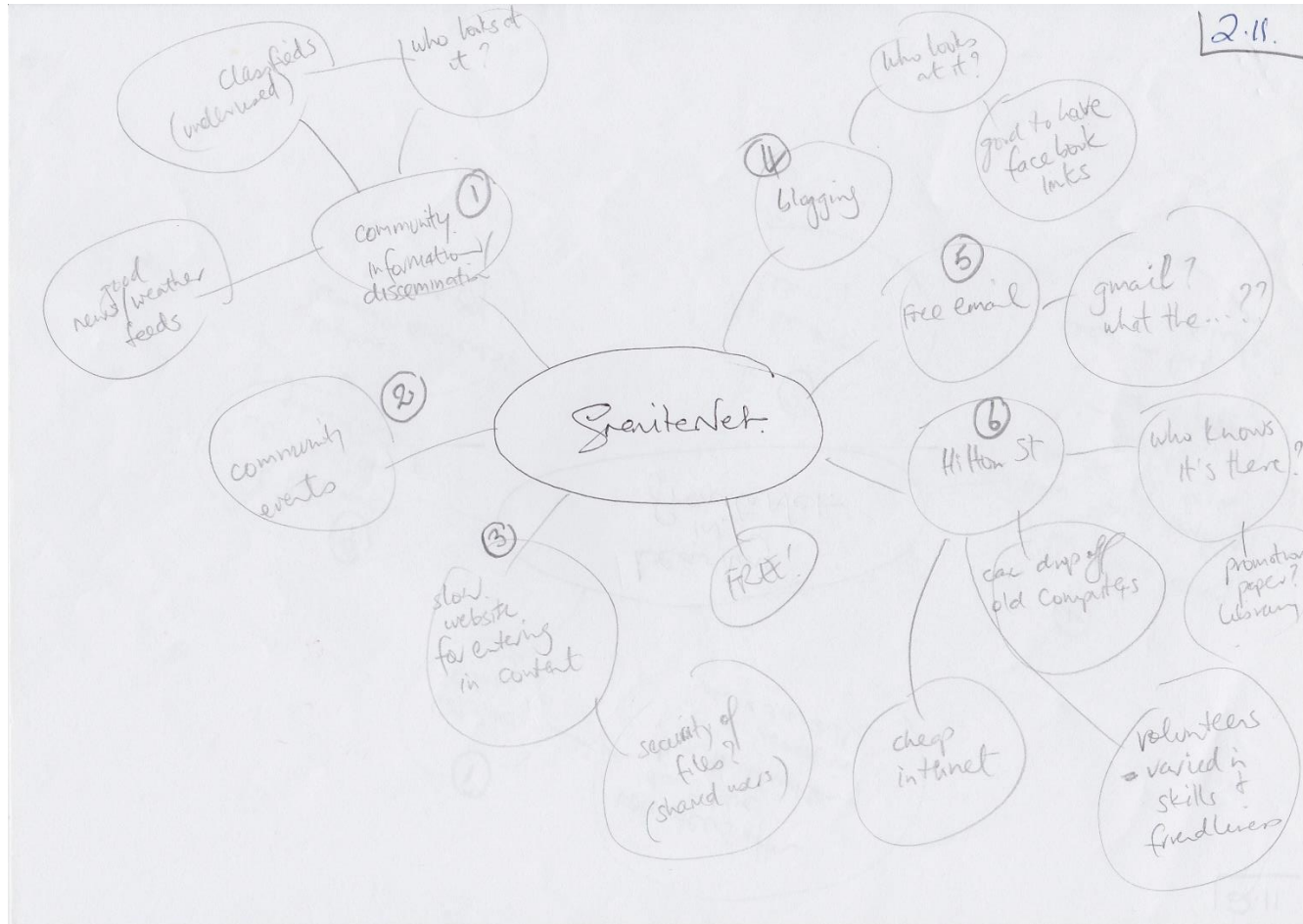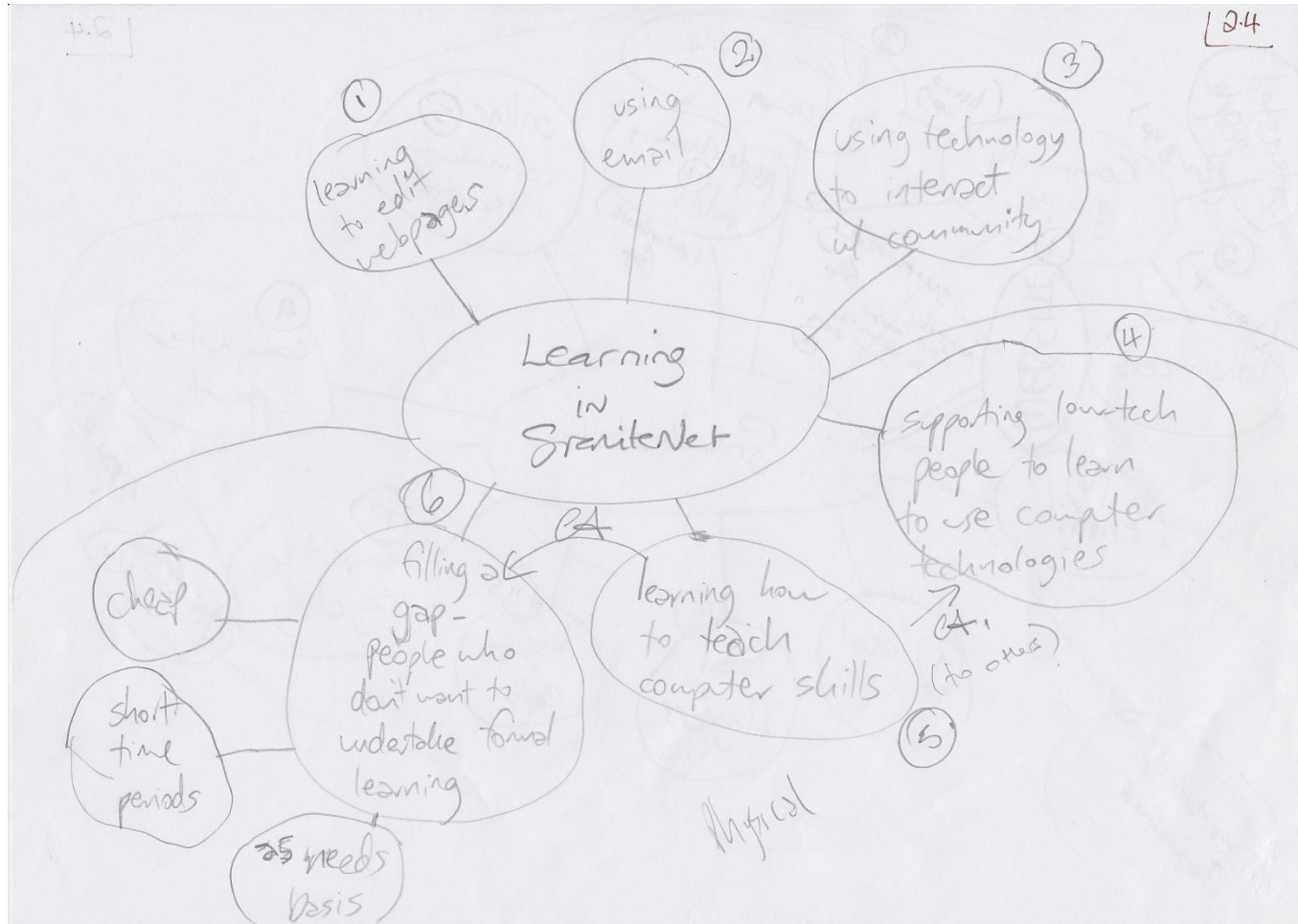
Figure 6-26   Mind Map 2.4 of Learning in GraniteNet: Blended Community Learning Conception

6.5.2.4. *The experience of learning in the Blended Community Learning conception: "It's about learning activities as opposed to information"*

Whilst both conceptions in the Communities of Interest cluster share a focus on community information literacy and the affordances of the GraniteNet community portal for accessing and sharing community information, the Blended Community Learning conception in Category 4 reveals an expanded awareness that includes a focus on linking community groups with interested people and enabling online community interactions; as such, "it's about learning activities as opposed to information". The awareness and use of digital and community information literacies also expands on the conception in Category 3, going beyond the literacies required for accessing and sharing community information online to incorporate a stronger focus on creation and sharing of knowledge in online and hybrid, or blended, environments and on evaluation of online information quality in terms of accessibility, usability and innovation. Similarities and differences between conceptions of learning in the two conceptions in the Communities of Interest Cluster are presented in the table at Appendix BB.

6.5.2.5. *The respondent expanded second order perspective in the Blended Community Learning conception as learning through exposure to variation*

The focus of the respondent second order perspective in this category is developing an awareness of how others see the world, and of others' experiences of the world and phenomena of interest, through interaction with different and familiar others in face-to-face, online and blended environments. The emphasis is on learning through exposure to variation in the form of diverse perspectives and experiences in the domain of common interest, including digital technologies, as illustrated in the following quotations.

Whatever you do, someone's going to have a web browser that behaves differently and they have a different screen, where you see it differently. It's just the way that the internet works. It is one of the more difficult issues.

There are certain things that you can do in person and share ideas. How to work with your children and things like that.

At the same time, Facebook doesn't really have anything for learning. It's more "push", you share certain things….

As I said before, when you teach someone something, you learn a lot more about it yourself.

That was really good interacting with people in a similar situation around Australia. There were not a lot of people in GraniteNet that had the same kind of focus as me and so it's good to make that contact with other people in a similar situation.

6.6.   The Community Development Cluster

The Community Development Cluster is comprised of the Digital Stewardship/Enterprise Learning conception (Category 5), the Community Technology Capacity-building conception (Category 6) and the Learning Community conception (Category 7). As illustrated in the outcome space diagram in Figure 6-1, conceptions in Categories 5, 6 and 7 represent a Developer perspective of learning in GraniteNet. Key characteristics of conceptions in the Community Development cluster are summarised in Figure 6-27 with reference to their respective conceptions of GraniteNet as the learning context and environment, conceptions of digital technologies and conceptions of learning. As illustrated in the diagram, digital technologies and the internet are viewed variously as "a kind of realm" that one can enter (Category 5), as a "window" between the world of the local proximate community and the world out there (Category 6), and as "a conduit for a raft of lifelong learning opportunities" (Category 7). As summarised in Figure 6-26 the dominant orientation of conceptions in the Community Development cluster is a whole-of-community approach to using digital technologies for digital inclusion, community development and capacity-building, albeit with distinctly different foci.

Figure 6-27   Key characteristics of conceptions in the Community Development Cluster (Categories 5, 6 and 7).

Although there is commonality in the conception of learning across all three categories in terms of a focus on learning about how digital technologies can be used for community development purposes (Community Informatics), the dominant learning metaphors reflect different conceptions of learning:

- Learning as experimentation, construction and bricolage[112], linked to "technology stewarding"[113] and enterprising[114] (Category 5);
- Learning as expanding awareness, developing insight and mastery, linked to empowerment (Category 6);
- Learning as driving, guiding, scaffolding and conducting, linked to engagement (Category 7).

Conceptions of learning in the Community Development Cluster are now presented and described with their supporting evidence in the form of quotations and mind maps in which they are articulated.

6.6.1. The Digital Stewardship/Enterprise Learning conception

In this category, GraniteNet as the learning context and environment is perceived as a community web portal, "an online community for Stanthorpe and the Granite Belt", serving as a kind of gateway for the local community, affording entry into the "new realm" of local community life online.

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[112]   *Bricolage* refers to the practice of sourcing knowledge, information and tools and using them to create something new. The concept is attributed to Levi-Strauss (1967) who used it to refer to "making do with whatever is at hand" or "recombining elements at hand for new purposes" (as cited in Baker & Nelson, 2005, p. 329). The term is used in the literature reviewed for this study to refer to improvisations in technology-rich environments as "tinkering through the combination of resources at hand" to solve real-world technology-related problems (Ali & Bailur, 2007, p. 5).

[113]   Wenger, White, & Smith, (2009) coined the terms "digital stewardship" and "technology stewarding" to describe a "perspective and a practice" whereby "individuals take responsibility for a community's technology resources for a time" (p. 24).

[114]   For the purposes of this study, the term *enterprising* is used to refer to the practice of building technology expertise and professional networks for business- or private enterprise-related purposes.

> *I would say that Granite Net is an "on-line" community for Stanthorpe and the Granite Belt.*

> *For me GraniteNet was about inclusion of the community in a technical sense; getting them involved in a kind of realm, I guess. Learning, helping people learn a bit about technology and stuff.*

As such, it is seen as serving a digital inclusion mission in three ways: firstly, by providing a mechanism for people to "learn a bit about technology" and "get online"; secondly, by serving as a "utility", a "resource", and a "reference" for people in the local geographical area; and thirdly, by providing an accessible online presence for local community groups and businesses alike.

> *The first thing that I have in my head is the website, because that is what GraniteNet originally was to me. It was just a website that we were developing… and then of course, who we were developing it for was the community.*

> *I always wanted it to be like a reference. It's somewhere you go when you want to find information about the community if there is something you need to find. I also wanted it to be useful, so it's like a utility; I want to go there and I want to get something from it. So it's like – "What's currently going on with the community?" "What's the weather?" Things like that. But I keep coming back to 'Community'. For me, that's the grounding of it. It's what Granite Net is meant to be about…I guess, community groups are what our major focus is, but anyone in the Stanthorpe and Granite Belt area…the geographical community.*

A holistic awareness of GraniteNet as a community organisation, community technology hub and community web portal with a past, present and future is evident, perceived from the Developer perspective. Differentiation between the physical and virtual GraniteNets is thematised in this conception.

> *The bits that I don't really have much to do with, is the computer support and computer recycling and the Internet Café that, in the last couple of years, seems to dominate GraniteNet ….*

> *I wish that "physical space" was not called GraniteNet, that it was something different; it isn't GraniteNet. It came from the same people involved with the website. GraniteNet was always about the website and not about the physical things.*

The mind map in Figure 6-28 reflects the defining characteristics of the conception of GraniteNet in the Digital Stewardship/Enterprise Learning conception of learning in GraniteNet. Associations 1 through to 6 reflect the focus on the community web portal as a digital inclusion initiative, community utility and community reference.
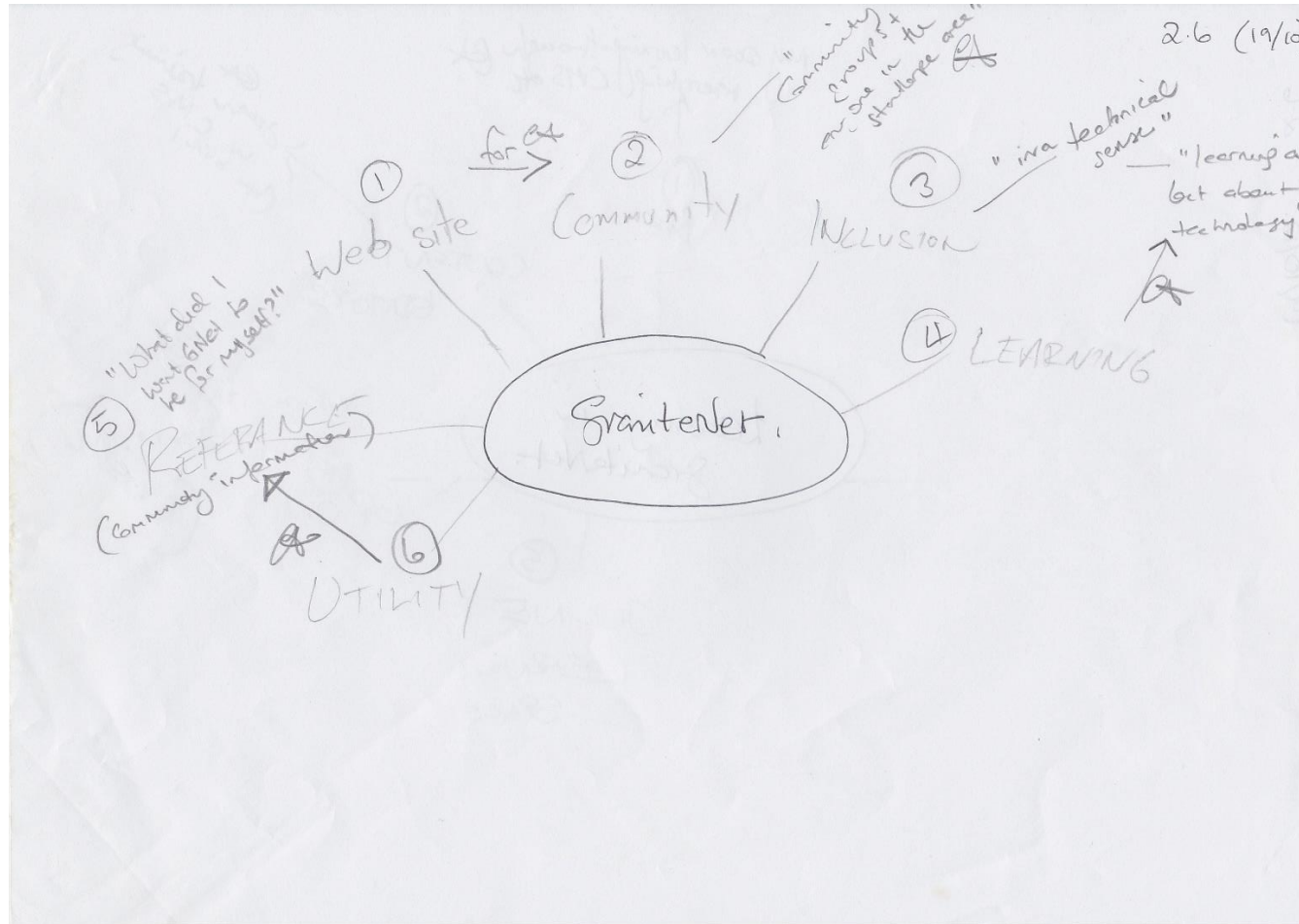
Figure 6-28   Mind Map 2.6 of GraniteNet: Digital Stewardship/Enterprise Learning Conception

In terms of a structure of awareness, the conception of digital technologies expands on, but is different from the Blended Community Learning conception in Category 4, where digital technologies are perceived primarily as a way of connecting people with common interests and enabling them to share knowledge and information. In this conception, the focus is more on how digital technologies work; on the technical features of the digital habitat; and on one's own relationship with digital technologies and identity as a recognized technology expert.

> *It was just the 'geek' in me to find out what kind of online resources were in the community or if there was an online community….*
>
> *We are the final point….Every kind of area within another technical area, if they can't fix it, it tends to come to us.*
>
> *I am a bit of an "information junky"….I didn't have Internet at home and so the course I did at the University was just internet searching and the Librarian ran it and it was just a one hour course. I thought, "This is really cool. I want to do this kind of thing."*

*Just from my knowledge of how friends and other people I interact with…
With respect to certain things… my technical computer skills, compared to
the general population, are fairly high…If I don't know how to do
something, I know how to find out how to do it.*

*So this particular length of script from there, all the way down to, (quite a
way), there, is all entitled and entirely to do with, that lovely rotating
banner on Granite Net….*

6.6.1.1. *Learning in the Digital Stewardship/Enterprise Learning conception situated in the practice of development and administration of the GraniteNet community portal*

The conception of learning in Category 5 is situated in the practice of the GraniteNet web developer/administrator role, with the object of activity twofold: firstly, development and administration of the GraniteNet website (digital stewardship) and secondly, building technical expertise and professional networks (enterprising). As illustrated in Figure 6-27, the learning frontiers for this conception are digital stewardship and enterprise development and the key learning questions revolve around problem-solving in the technical aspects of digital stewardship (e.g. "Who is going to be using this?" "What are their needs?" "Is there a better way?").

Personal learning and the learning of others are both thematised in this conception. This conception of learning is reflected in the mind map in Figure 6-28. Associations in branch one reflect a focus on personal learning afforded in the area of web development (enterprise learning). Associations in branch two reflect a focus on the training of community group Content Editors. Associations in branch five reflect the digital learning futures aspect of this conception "online learning space". Awareness of learning in the physical space is reflected in associations in branches 3 and 4.
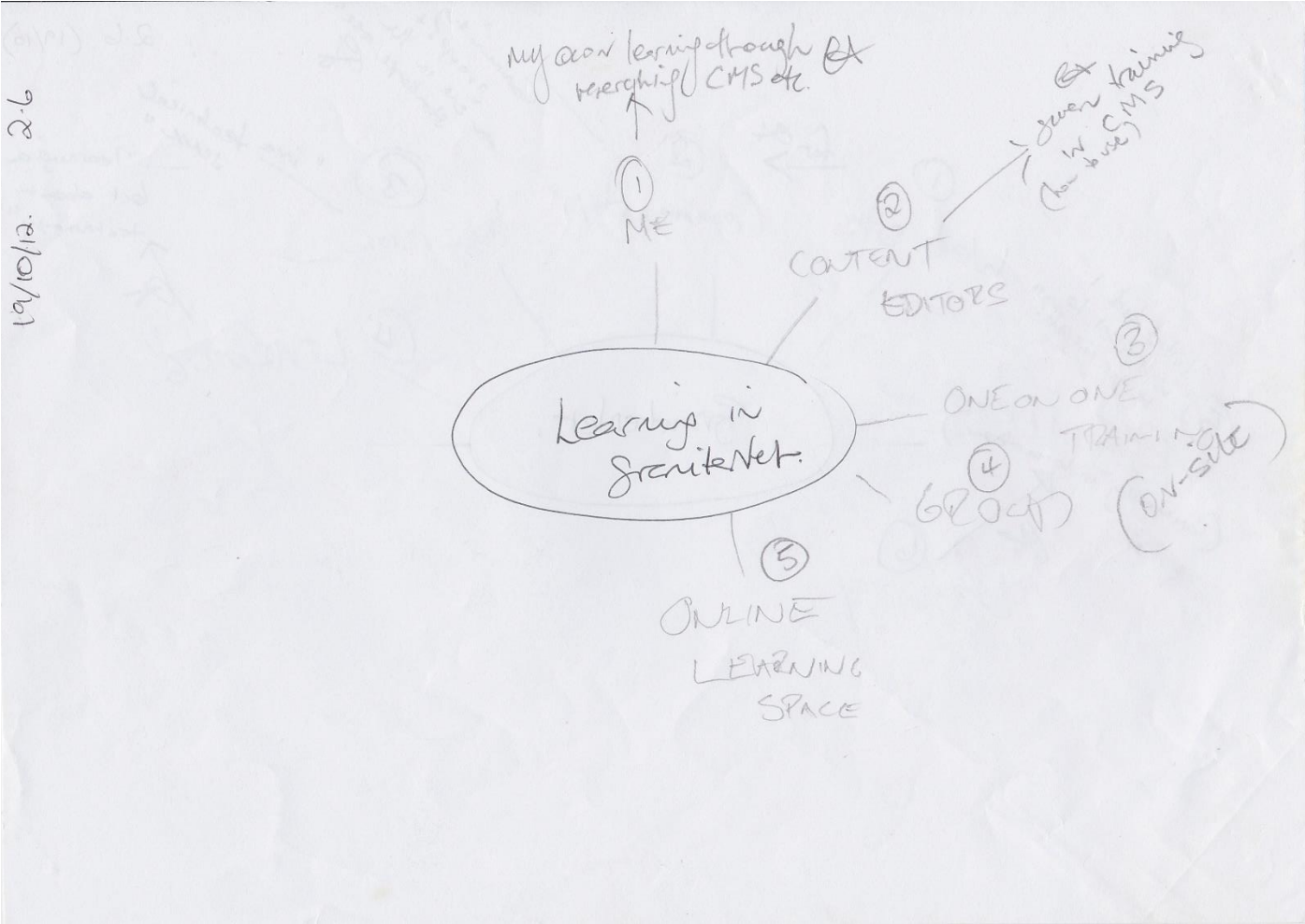
Figure 6-29   Mind Map 2.6 of Learning in GraniteNet: Digital Stewardship/Enterprise Learning Conception

Learning in this conception is strongly project, task and problem-based. It involves envisioning, construction, problematisation, research, inquiry, investigation and experimentation with emerging digital technologies, ongoing problem-solving, trial and error learning and networking, both online and offline, with others, including technical experts, project leaders and participants and local community groups and business enterprises. Learning is also afforded by teaching others some of the more technical and advanced skills related to web development and administration, primarily teaching "users", that is, the GraniteNet Content Editors and other technical volunteers and members of the GraniteNet Board.

> *So researching the Content Management System… that was big for me, because the products that we discovered. I've learnt now. It is what I use all the time now.*

> *When I can't figure out something, that's when I start researching…."Okay, what am I missing here? Is there's something I don't know?"*

> *So it's trial and error; in reality, there is no perfect way to do it and I am not a genius at codes— it's important. I know people out there that will write a program and get it spot on the first time. I'm not one of them. So trial and error is a big part of it.*

> *I've always found that when you have to teach someone a skill, you learn it more yourself, because you really have to do the research and figure out how to explain things.*

> *There are plenty of technologies that I don't know and there are plenty of technologies that I just have a basic understanding of. That's when you start calling on other people who know….*

> *There are a lot of things in there that I have a basic understanding of, some security aspects. There are people I know that are really good at security and networking and things like that. I'll say, "This might be the problem" and they can go and validate that for me.*

> *If I'm asked something and I don't know, that's usually added to my "to-do" list or "look-ups" or "find outs", so that I know what that is or what that does.*

The conception of learning in the Digital Stewardship/Enterprise Learning conception of learning in GraniteNet is illustrated in Figure 6-30 linked to the three learning aspects in the study's holistic conceptual framework.
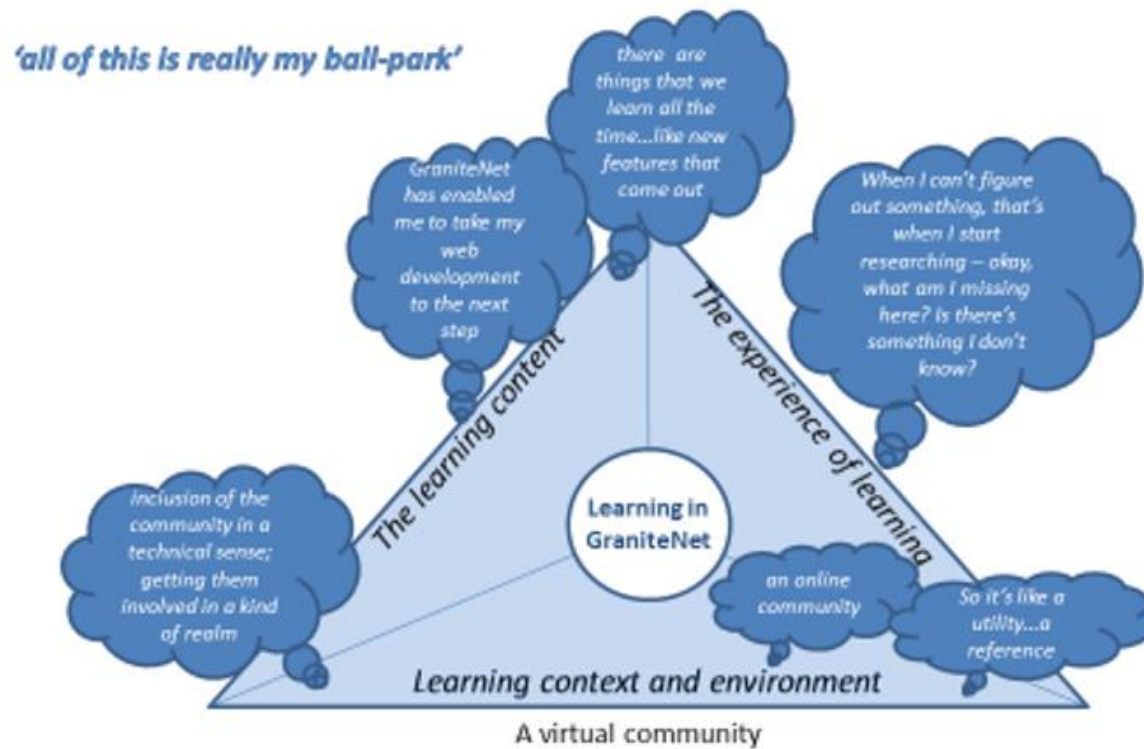
Figure 6-30   The conception of learning in the Digital Stewardship/Enterprise Learning conception linked to the three learning aspects in the study's holistic conceptual framework.

The experience of the learning content and processes for this conception can be organised into nine areas of task-based learning content related to development and administration of the GraniteNet community portal, each with its related learning processes:

1. Designing and developing community web portal features and functions.
2. Developing processes and procedures for users to follow.
3. Providing instruction, advice and support to users.
4. Managing website accessibility and security.
5. Maintaining and improving the website.
6. Responding to changing requirements.
7. Troubleshooting.
8. Documenting (leaving a trail for others to follow).
9. Envisioning new opportunities and possibilities for the community portal.

The experience of learning in the Digital Stewardship/Enterprise learning conception is presented at Appendix DD as a sequence of task-based learning content, with examples of related learning processes for each, supported with extracts from the interview transcripts in which they are articulated.

6.6.1.2. *Expanding awareness: Experiencing variation as understanding the user experience*

The focus of the respondent expanded second order perspective in this conception is understanding how "low-tech" people experiencing using, and learning to use, digital technologies in order to be able to, firstly, design useful and user-friendly applications and processes, and secondly, provide training and support to users in appropriate ways, pitched at appropriate levels, and using appropriate learning materials and resources.

What is the process to go through and how can I make it as simple as possible?

To make it easy enough for someone else to create a user account and assign security to, so that anyone in GraniteNet could create a new community group or whatever....

I am always trying to think of ways that would make it easier for someone to use....Sometimes, I have a bad habit of over-complicating things, I don't always know.

What confuses me sometimes I might know two or three ways to do a certain thing. I go, "Which way is the user most likely to remember?

6.6.1.3. *Differentiating conceptions of learning in Categories 4 and 5*

The conception of learning in GraniteNet in the Digital Stewardship/Enterprise Learning conception is inclusive of and expands on the Blended Community Learning conception in Category 4. As such, conceptions of learning in Categories 4 and 5 share some common characteristics, however there are some critical differences of meaning and in the structure of awareness that, together, clearly distinguish the conceptions of learning in the two categories. In particular, these relate to the following four aspects of the analytical framework:

1. The conception of GraniteNet (structure of awareness):
   - Broad perspective: in Category 5, GraniteNet is perceived from the Developer perspective, whereas in Category 4, GraniteNet is perceived from a dual Customer/ Provider perspective.
   - Socio-spatial-temporal context – temporal aspect: In Category 5, there is a sense of change over time, whereas the temporal aspect is not thematised in Category 4.
2. Conception of GraniteNet (referential aspect).
   - In Category 5, GraniteNet is perceived and experienced as an online community for the local community—a kind of parallel realm for the local community, whereas in Category 4, GraniteNet is seen primarily as a communication tool for local community groups and as a "place to do community things".

- In Category 5, the distinction between the physical and virtual GraniteNets is thematised in a way that places higher value on the virtual, whereas in Category 4 the blend of the physical and virtual is what is valued.

3. Conception of Learning in GraniteNet (referential aspect).

- Learning in Category 5 is experienced as situated in the practice of digital stewardship of the GraniteNet community portal (learning as bricolage thematised) and is linked to enterprising activities (*enterprising*) and participation in Networks of Practice (NoPs)[115] In contrast, learning in Category 4 is situated in the practice of the community group Content Editor role linked to participation in one or more local Communities of Interest (volunteering) with learning digital community information literacies thematised.

These critical differences, and the commonalities between Categories 4 and 5, are illustrated in the table at Appendix EE.

6.6.2. The Community Technology Capacity-building conception

According to this way of seeing GraniteNet, and learning in the context of GraniteNet, digital technologies are experienced as communication tools for "life in the digital age" ("when you think about it…no different from using the telephone") and the internet as a "window to the world"; together, they are a way of communicating in and with the world, and "a way of communicating the world, in a general sense, back to the community":

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[115]   As described in Fischer et al., (2006), "within NoPs, members share a common practice but do not work together in an interdependent way by which they need to coordinate their work" (p. 79).

> *...like everything else, people tend to get carried away ... it's a tool, that's all. 'That's all' puts it down a little bit, but that's not quite what I meant. It's a tool and a tool is only as good as how you know how to use it.*
>
> *The internet is okay—the general idea that you can convey to seniors, if, when you think about it, is that it's no different from using the telephone. People used to have concerns about using the telephone....*
>
> *...what the broader internet or World Wide Web—whatever you like to say—is a way of explaining to the community, how this works; how you can get it to work for you; how it can empower you to do things that you can't easily do by other ways.*
>
> *...provides a window for people who can't access this window on the web so easily and also it provides a view of the community to the people outside the community.*

There is also a sense of GraniteNet facilitating learning at the community level in three ways: firstly, by raising community awareness of the affordances of the internet and digital technologies for communication; secondly, by raising awareness of what is going on in the local community, via promotion of community groups on GraniteNet and thirdly, by raising awareness of the wider world.

> *Starting off with GraniteNet, I've always seen it basically as a way of strengthening the community. It does, or can do, this in a whole range of ways. For instance, it provides the community with a way of connecting to the wider world. I mean this is obviously a two-way thinking. It not only provides a window for people who can't access this window on the Web so easily and also it provides a view of the community to the people outside the community. Perhaps more importantly, it is a way of explaining to the community what the broader Internet or world wide web—whatever you like to say—is a way of explaining to the community, how this works; how you can get it to work for you; how it can empower you to do things that you can't easily do by other ways.*
>
> *The fundamental thing is this bottom piece, overcoming fear, uncertainty and doubt. It's not only seniors, there are a lot of people ... It's nothing to be ashamed of. The whole thing is teaching people that this really is a tool.*

With regard to the conception of the content of learning, three areas of content are thematised: learning basic computer skills for seniors, with internet, photography and email as "tools for life in a digital age; learning to overcome fear of using

computers and the internet (attitudinal change); and expanding awareness of the world "out there" at both individual and community levels. In terms of the processes of learning, there is a strong focus on differentiating between the informal learning processes adopted at GraniteNet and more structured, formal learning, which is perceived not to be able to meet people's individual needs.

> *The one-on-one opportunities that come from having that room open and staffed for the hours that we are able to now. There are a lot of people who find formal courses too daunting. Even if they go to a formal one, they have questions that don't get answered at those, so it's great for them to come and do this one-on-one, and good to see that we have such an array of men, women, young, older, that people can usually find someone, I'm sure, that they can relate to.*
>
> *...helping people learn about the technology around computers; it's about using the Internet and using your email. Helping people learn to use software like playing with your digital photographs and helping seniors to make contact with their grandchildren. A whole range of things related to that....*
>
> *It's more physical, showing people how to use computers, because you need people at a certain level of technology to be able to get to that information and the stuff that GraniteNet teaches, in the physical space—people don't have that level of technology....*
>
> *Then if you go into the wider community—the use of software is a wonderful way of teaching people on a one to one- basis, with volunteers. Then you can address the people's needs, unlike going through a training course, you can sit down and tell people what they want to know. In the course of which, you will hopefully tell them lots of things that they didn't even know that they needed to know. Nonetheless, it's quite different from "learning", going to a course or going to a lecture or something. You are actually sitting down with a person saying, "You tell me what you want to know."....*

In terms of a structure of awareness, an expanded awareness of GraniteNet as a community-based organisation, community technology hub and community web portal is evident along with an appreciation of the transacted or negotiated nature of GraniteNet as a community service provider with specific objectives as well as an organisational entity with a past, present and future.

The respondent second order perspective, that is, learning about how others see and experience the world and phenomena in the world and in particular, digital technologies—is focal in awareness in this conception.

> *…obviously GraniteNet has been quite focused on helping seniors, who, in many cases are a group that need help in this area, but by no means confined to seniors. I still say it is a resource to help and it comes back to what we were saying about empowering people; explaining to people; helping people. Then, of course, you go round—these are all tied together; you can't really…I've written them as separate things, but they are not really. It's all a way of communicating the world, in a general sense, back to the community.*
>
> *It makes the community hopefully realise that there's a lot more going on in the place than immediately comes to the eye.*

The annotated respondent mind map of "GraniteNet" in Figure 6-31 reflects this *Community Technology Capacity-building* conception of learning in GraniteNet. Associations in the branches of the mind map reflect a holistic awareness of GraniteNet and of learning in GraniteNet, with GraniteNet's physical and virtual services and facilities and learning at both individual and community levels equally focal in awareness.
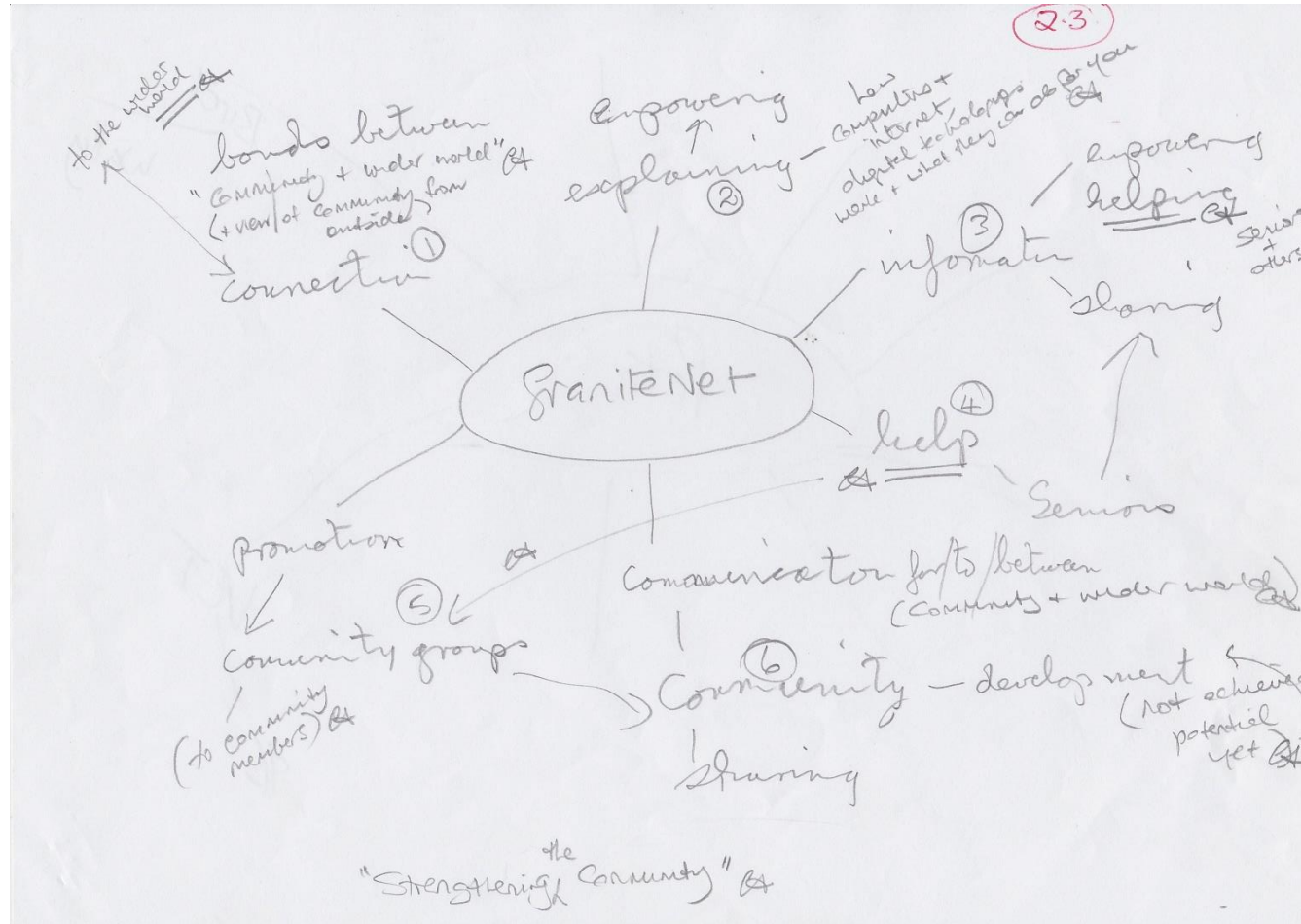
Figure 6-31   Mind Map 2.3 of GraniteNet: Community Capacity-building Conception

6.6.2.1. *Learning in the Community Technology Capacity-building Conception situated in the practice of Community Informatics*

The experience of learning in this category is situated in the practice of Community Informatics and is infused with a sense of learning as one being exposed to new information, ideas and experiences as a part of life, developing an awareness of different points of view and perspectives of the world, and continually building on one's knowledge and expertise through life experience. As such, the content of learning is life-based, includes a focus on building technical expertise in the use of digital technologies, and taken for granted. Experiential, life-based learning as exposure to variation is seen as the primary mechanism of learning in this conception.

> *I find it difficult to find examples [of personal learning], because all the time at GraniteNet, you are sitting in the GraniteNet, say, which I would do for quite a while. People come in and ask you something and they always ask you something that is slightly different from the usual. It may be a common problem but they put it somewhat differently, because they are coming from a different point of view. In that sense, you are always learning or you are always thinking, "Okay, how do I apply what I already know, or do I need to know something else to help this person?" Those kind of things I found, went on all the time….*

> *And of course, working with people say, like [Glen] and [Peter], I was always learning technical stuff, because they obviously knew—they were both quite different—but they both knew completely different things from my experience, so I am always learning….*

> *My learning space is like "me in the world, learning new things"….*

The respondent mind map of "Learning in GraniteNet" in Figure 6-32 reflects this Community Technology Capacity-building conception of learning in GraniteNet. Associations in the branches of the mind map reflect an altruistic conception of learning in GraniteNet focused on digital inclusion through development of basic digital skills, confidence and awareness. Association number three reflects the whole-of-community focus that characterises the conception of learning in this and the other two categories in the Community Development Cluster.
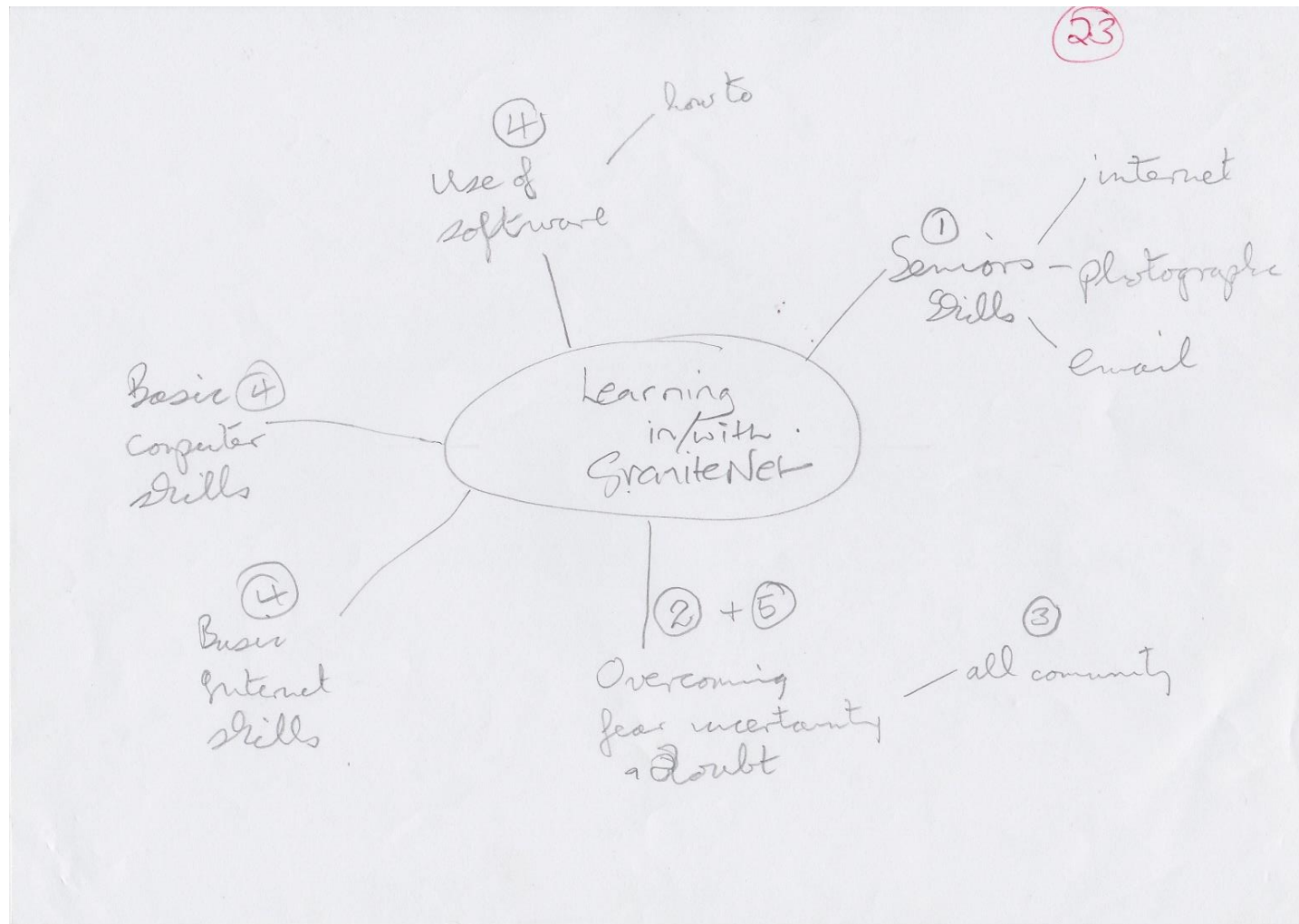
Figure 6-32   Mind Map 2.3 of Learning in GraniteNet Community Technology Capacity-building Conception

The learning frontier in this conception is understanding how technology can be used more effectively as tool for community development.

> *I suppose that the only thing that I didn't go for is Community Development. I suppose that's an area where GraniteNet could possibly do more if it had the time and resources, in the sense of providing facilities, for people and groups, to develop other things. I don't know whether that's possible, but that was something that came to my mind when I was thinking about this….Maybe there are other things in the community where more could be done to help other people develop things…. There again, there is an area where technology may help them further, but I don't know—I really don't know. I am sure there are other things—what, I really don't know.*

Figure 6-33 presents the conception of learning in the Community Technology Capacity-building conception linked to the three learning aspects in the study's conceptual framework and highlighting the experience of learning situated in the practice of Community Informatics. Critical differences among conceptions in Categories 2A, 4 and 6 are detailed in the table atAppendix FF.
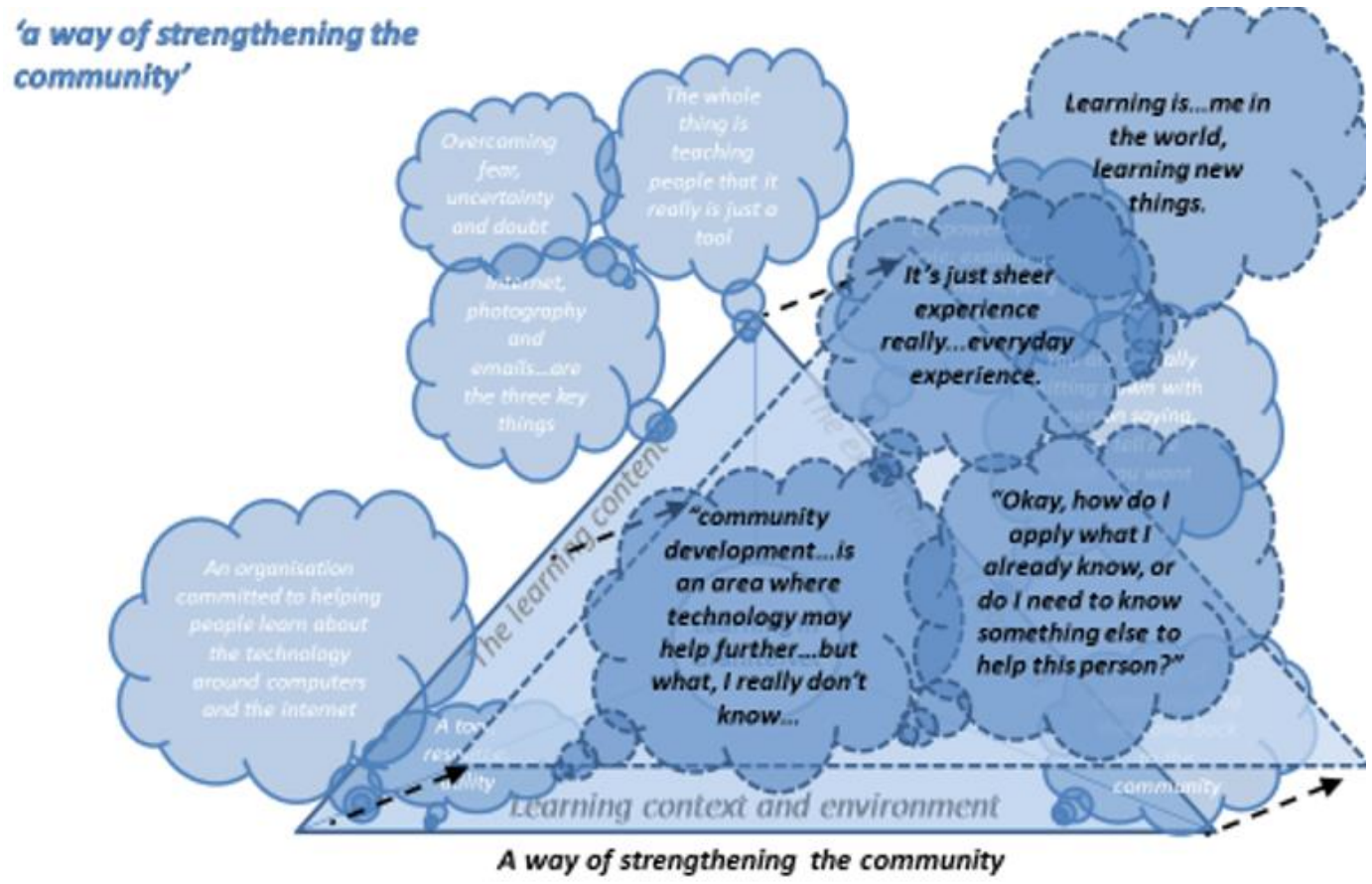
Category 6: Community Technology Capacity-building Conception

Figure 6-33 The conception of learning in the Community Technology Capacity-building conception linked to the three learning aspects in the study's conceptual framework and highlighting the experience of learning situated in the practice of Community Informatics.

6.6.3. The Learning Community Conception

Learning in the Learning Community conception is learning through participation in GraniteNet as a community development project with the objective of using digital technologies as an enabler, resource and catalyst for facilitating and promoting community engagement and participation in lifelong and life-wide learning—that is, the development of the local community as a Learning Community. Personal identification with the ongoing development and success of GraniteNet as a community development and learning community project, its relationships and partnerships with community stakeholders and its sustainability over time are all focal in awareness. A holistic conception of GraniteNet as a community-based organisation, community technology hub, community web portal and community development project is evident.

> *Starting, I suppose, with lifelong learning. This is where I came to GraniteNet from. This is what attracted me. The strong sense of community—I just think that it is not only about what GraniteNet provides, but what has brought GraniteNet to this point. Community people from very different sectors have been involved in the process over the time I've been involved with it.*

> *My synopsis of GraniteNet right now…. We are not an exclusive Seniors only or adult only venture. It is a community venture and community starts from pre-school up to the nineties.*

> *That moves on to lifelong learning—it doesn't matter what their age is, whether they're in their sixties, seventies or with Mission Australia. Younger ones and that sort of stuff, they start learning and then hopefully will continue learning because of what training we've given them—basic training. They suddenly find that there is so much more out there. They can learn if they need to how to read books, e-books and everything without having to go to the library. If they're disadvantaged in some way—maybe physically unable to get to a library all the time— and you can teach them the technology—how to find hobbies and games and reading and just learning all up. It opens a whole new world to people for it and being able to help, particularly some of our volunteers we have now from Mission Australia, to gain some skills and the fact that they are volunteering here.*

In this category, GraniteNet is perceived as an Information Technology- and learning-focused community development project—"the hub of the learning community"—and is seen as a mechanism for digital inclusion with the objective of promoting and affording access to lifelong and life-wide learning opportunities, particularly for those with the greatest need, such as seniors, disadvantaged youth, people with disabilities, but also for the wider community. Focal in awareness is an affiliation with the local community, a strong adherence to the value of learning for community development, participation and engagement, and a commitment to the project over time as a strategy for achievement of a broader objective of developing the local community as a Learning Community.

> *Well, learning community in the sense that if GraniteNet is going to be the hub of the learning community, then people have to go there for specific reasons and they have to be connected to it as a community. Whereas at the moment it's still isolated and it's still on the periphery. It's not a central focus for people that go there and use it every day.*

> *The GraniteNet experience still continues to be a Noticeboard for any community group. It also is definitely highlighted with the learning side. To me the Learning Space is probably what I feel would probably be 90% of what GraniteNet was all about. It was a learning space…People—community members—learning and feeling more comfortable with computers in any way, shape or form. Hard[ware] and software etc.*

> *GraniteNet is quite unique. It's a community tool for engaging and connecting with the community, youth and digital literacy mechanisms and skills, but it's really for the community by the community, that's what drives it. So there's an effect—whatever the community wants it to be. But at the moment, its main focus is on providing access to internet and digital training, literacy training, those kind of aspects. I don't think we've gone—our business take-up hasn't been good enough for us to say that there's a strong role for us. But it is an essential point for local information, for local discussion.*

The conception of Granitenet in the Learning Community conception is reflected in the respondent mind map in Figure 6-34. Associations in the mind map reflect a focus on lifelong learning and community engagement, GraniteNet's relationship to other community sectors and the sense of vulnerability alongside opportunity.
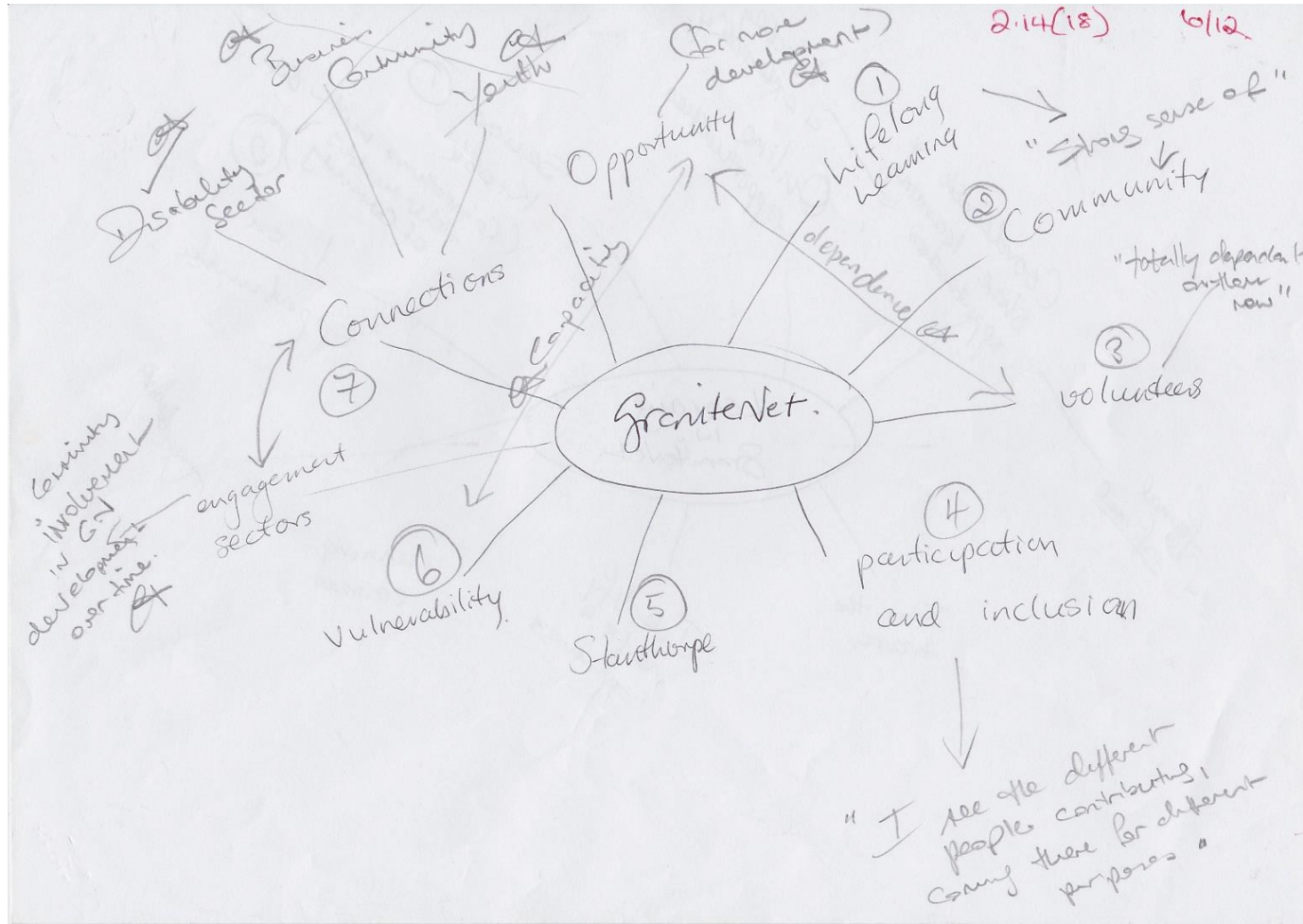
Figure 6-34   Mind Map 2.14 of GraniteNet: Learning Community Conception

The conception is infused with a sense of grappling with the nature of GraniteNet as a concept, as well as its inception and original vision, past history, present circumstances and possible future directions. An expanded awareness of GraniteNet as a community web portal, community-based organisation, community technology hub and community development project with a past, present and future, is thus evident, as is an awareness of the transacted and negotiated nature of GraniteNet as a community development project and as a phenomenon that means different things to different people.

> *Probably more so in the beginning…when we were working with the groups and there were a lot of people who were very frustrated in that first year, when there was nothing happening. There was a lot of talk and a lot of trying to sort out "What is GraniteNet about? What are we going to use?" People were struggling to try to understand the concept and still do….*

> *It's quite a difficult one actually, because we all have our own slightly different vision of what GraniteNet is. But I think, to put it in what would be able to be taken on board and understood, that sounds condescending, but it's a very different concept isn't it? "Can we be used as a vehicle to access external learning opportunities?" I think it's really important not to forget the informal as well, because that's where a lot of people are and it reinforces that personal satisfaction and also a sense of community and value of GraniteNet and we could do that quite easily, I believe."*

> *I think perhaps, our role is… to keep us true, maybe to what it was formed for, the Lifelong Learning concept.*

In this conception, digital technologies and the internet are seen through a learning lens as a learning catalyst and conduit; as learning tools, enablers, and resources; as mechanisms for promoting access to and participation in "a raft of learning opportunities" and for participating in civil society more broadly. Focal in awareness are the opportunities and limitations of digital technologies for learning in various forms and settings across the scope of 'life-spaces' (life-wide learning), including connecting with others 'in community', providing access to formal learning opportunities, transforming participation in the democratic process, and enabling people to expand their experience and "envision something different".

So, on the one hand there's our opportunity to contribute to digital literacy, but on the other, is just to use GraniteNet as a mechanism and vehicle for a raft of learning opportunities.

Whenever you are using the computer, there is always some learning, even if you are just trying to do something with banking or whatever, there is always something new. Or doing something with your kids at school, there is always something that you are learning new.

You might go on there and you might have "did you know that the [local tourism association], or USQ is now providing courses on such and such? So log in here and book your course, enrol today!" So formal, informal, we've got those types of things are in one space that people can access.

So I think that one of the things that the Internet is greatest for, is to allow people to have a political say without having to commit to the whole party politic things.

So I think that there's that aspect of it, certainly in expanding your horizons because what it does, it takes you out of what you are familiar with and it shows you something that you won't necessarily see somewhere else....I think it's a bit like going to the movies. It provides a perspective that you wouldn't otherwise get. I see it as a tool for the possibilities that computers can offer, for helping people to envision something different. That, I think, if you can allow people to expand their processes of thinking, then you've got the potential for change.

6.6.3.1. *Learning situated in the praxis of Community Development*

The conception of learning in this category is seen from the Developer perspective and is situated in the experience of participation in GraniteNet as a community development project. As such, learning is situated in the praxis of community development, is seen as interactive, experiential, change orientated and transformative, and experienced as participation in collaborative action learning and action research processes. The nature of the relationship between learning, community and technology is explicitly thematised and problematised, with a focus on differentiating between information dissemination and learning, and between formal and informal learning. Personal learning, others' learning and community learning are all thematised. Similar to the conception of learning in the Community Technology Capacity-building conception in Category 6, the learning frontier for this conception is how digital technologies can be used for community development (Community

Informatics) but with an emphasis on and the importance of digital literacy for lifelong learning and community engagement.

> *So, Learning in Granite Net. Are the volunteers learning anything? I don't know, I hope they are. Then, for Public Learning, to me, GraniteNet—the body that it is, is about providing information into the community through its website, but also providing a lot of internet or computer support.*

> *I mean where do we go from now? That's one thing to think of. GraniteNet needs to expand and that's part of "My Learning Space". "How do we encourage people to learn? How do we do it?"*

> *…literacy is the starting point whether it's reading literacy or if it's digital literacy…It's just been a part of my work. …It's all very exciting to see people's minds open up to what is really happening.*

> *There are a lot of people that don't want to undertake formal learning, whatever few institutions we have left in Stanthorpe that aim at people like this. They don't want to do a Certificate or a Degree or whatever. They just want to know what they need to know— to send an email, edit a photo. It's cheap, it's short time periods, on an as needs basis. They don't want to learn stuff that won't be useful to them, because, by the time they need to use it, they are not going remember how to do it.*

> *I would say, "Yes of course, I'm always learning in an informal way", but then you say "specify", and I say, "Okay, now we're getting particular." Because I thought that everything in life is an informal learning activity….*

> *There are people at every level across the spectrum in information digital literacy skills and techniques…. I guess the librarian in me, still thinks 'okay, there's a vast array of information out there' but people say, "we can close the libraries now, because the internet is here". I don't think there is enough general literacy knowledge to be able to distinguish what is sound information and what isn't.*

> *Is there much education on GraniteNet, as in, is there anything informative as opposed to just community events or stuff? I was just thinking that sometimes there is Computer Awareness things on the Home Page—the Webmaster, or whoever, would put it up, which can be useful. I think that there was something on there. I was actually going to make a comment, but I don't know if I could.*

The conception of learning in the Learning Community conception is reflected in the respondent mind map in Figure 6-35. Associations in the branches of the mind map reflect a focus on" a raft of learning opportunities"—both formal and informal— for different sectors of the community.
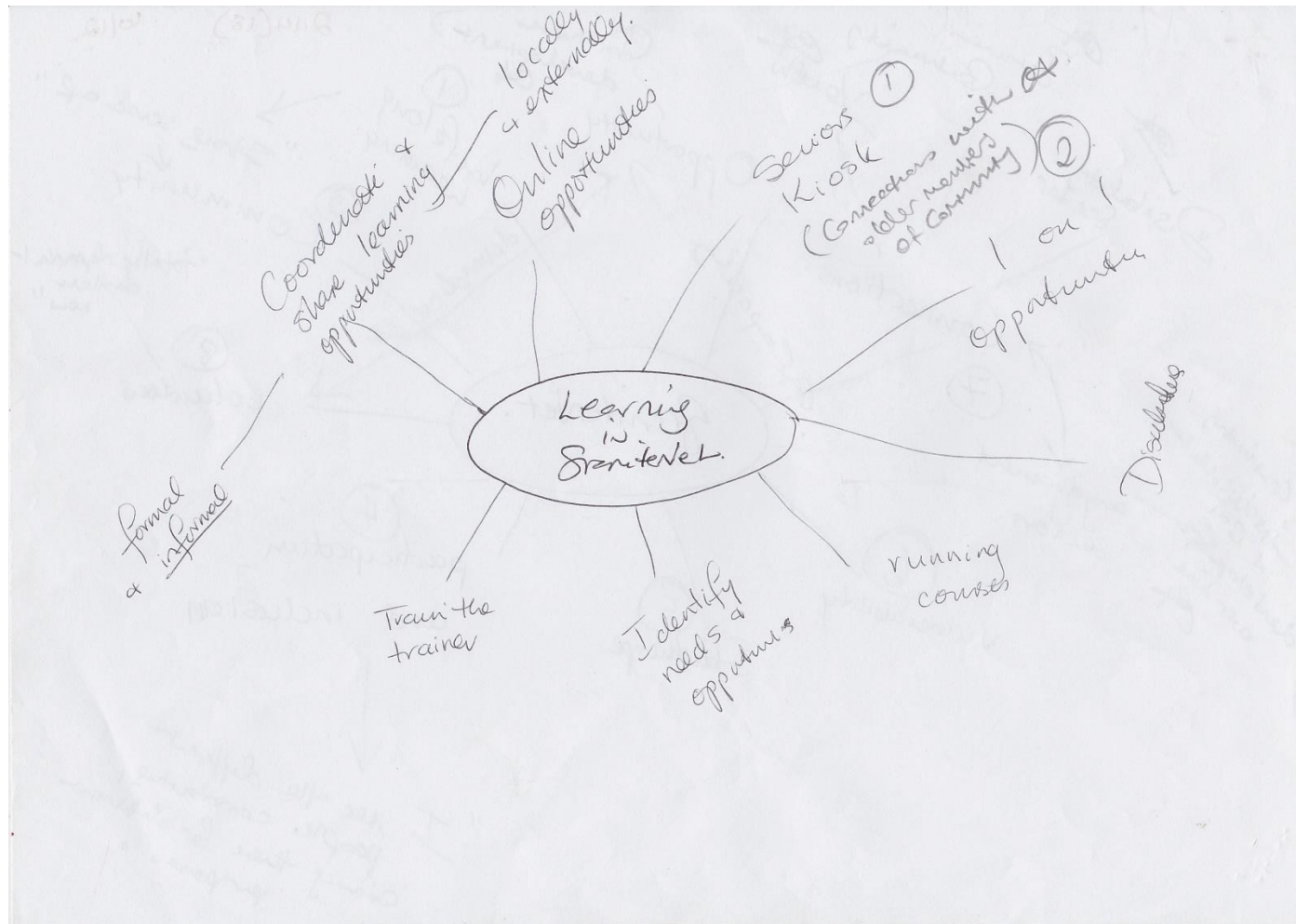
Figure 6-35   Mind Map 2.14 of Learning in GraniteNet: Learning Community Conception

6.6.3.2. *The content of learning in the Learning Community conception*

The content of learning in this category is experienced as learning knowledge and practice in the community development content domains. This learning content is experienced at a local, or instantial level and also at a more generalised level. The content of learning as it is experienced in the Learning Community conception can be organized into the following four learning domains, identified as community development knowledge or practice/praxis[116]:

- Learning about the local community (including learning about how others see and experience GraniteNet, digital technologies and ICTs) (experienced as propositional, relational and experiential knowledge)[117].

    It was nice, just learning about each other and the community.

    ...the realisation that there were so many people in the community, who were involved and so many people who wanted to share and network and relate to each other via Granite Net.

- Learning about GraniteNet as a community development and community learning project (experienced as CD practice).

    Well, "learning community" in the sense that if GraniteNet is going to be the hub of the learning community, then people have to go there for specific reasons and they have to be connected to it as a community. It's a community tool for engaging and connecting with the community, youth and digital literacy mechanisms and skills, but it's really "for the community by the community", that's what drives it. So there's an effect—whatever the community wants it to be.

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[116]   Praxis is defined for the purposes of this study as "the interdependence and integration...of theory and practice, research and development, thought and action" (Zuber-Skerritt, 2001, p. 15).
[117]   Includes the respondent expanded second order perspective as learning about how others experience the world and phenomena in the world

- Learning about learning (including learning about the affordances of digital technologies for lifelong learning) (experienced as propositional, relational and experiential knowledge).

  Because I think that without the reflective component that comes with participation in something, with the action, then you don't learn and I think learning is essentially experiential. If you can incorporate it with, or integrate it with knowledge and that's how knowledge becomes learning.

- Learning the praxis of community development, including community engagement and community informatics.

  I guess I learnt the importance of how you engage with the people, in terms of how you start out bringing people on board and that requires making it very clear about expectations and what people see things as and where they're not familiar and they don't understand that you have to have the time to spend to make…not "to make" – to help them to understand what's going on.

Specific learning content in these four domains is summarised in the table at Appendix GG and includes supporting quotations from interview transcripts in which these conceptions of the content of learning are reflected.

6.6.3.3.   *The experience of the process of learning in the Learning Community conception*

Situated in the praxis of community development, the process of learning in the Community Development conception is and is experienced as participation over time in action learning and action research processes that involve:

- Applying existing knowledge and skills to new practice problems in collaboration with others.

  I guess that I already came to it with those commitments to the values. I had to learn about how it was applied here.

- Participating and interacting with others in structured group processes where knowledge, skills, ideas and perspectives are shared.

> *See how different communities give different priorities or different focus to supporting the kind of things we were doing in Granite Net….All the different communities, figuring out what would and what wouldn't work in our community.*

- Engaging in processes of inquiry, planning, "strategising", experimentation, and reflection on assumptions, processes and outcomes.

> *It's quite satisfying to feel some "unpacking" of all that kind of thing and also to contribute to the future development and seeing who else we can bring on-board. What opportunities that there are. Maybe I just like that kind of thing…. Engaging with the different parts of the community and all those external partners and trying to bring that together in a meaningful way….*

These learning processes are experienced, variously, as exciting, engaging, enjoyable, challenging, satisfying ("something special"), and at times as frustrating, disappointing and like being "out on a limb".

> *I felt very engaged… …it's been a great experiment and some of it has been good, but not all of it has been….*
>
> *I can't really think of anything where that was one moment. I think it's been progressive, accumulative. I don't know if there have been any of those Heart moment…. Sometimes, it's really satisfying and sometimes, it's disappointing."*
>
> *It was nice to have that interaction with all the different people from different areas and get to know people who were interested in things like that. Lots of them didn't continue their involvement later on.*
>
> *It's a fine line I think. Sometimes you're out there on a limb, not knowing if you should continue to drive it, despite it or just let it go.*
>
> *I guess we were like guinea pigs. We were just testing it out, but it also meant that we were all volunteering our time—most people…. is just starting out and you have to be dragged along with the trial and error of things….*

6.6.3.4. *Differentiating among conceptions of learning in the Community Development cluster*

Whilst conceptions and experiences of learning in each of the three categories in the Community Development cluster reflect a community development, or capacity-building, perspective of GraniteNet and digital technologies, each is infused with a conception of GraniteNet as the learning context and environment, and of learning in this context. For example, from the perspective of the Digital Stewardship/Enterprise Learning conception in Category 5, GraniteNet is viewed as the community web portal, a vehicle for fostering digital inclusion "in a technical sense" whilst simultaneously affording personal engagement in enterprise and network learning linked to the "reputation building" aspect of the digital stewardship role (Wenger et al., 2009, p. 29). As such, GraniteNet Inc. (the community based organisation) is at the margin of awareness and GraniteNet the community technology hub thematised only in terms of its antithesis to the community portal, which in itself tells an important story of GraniteNet's evolution.

Prominent in the Learning Community conception in Category 7, on the other hand, is a focus on the affordances of GraniteNet for promoting lifelong learning and community engagement with a strong interest in supporting development among community members of foundation literacies for learning about and with digital technologies, with less interest in direct involvement in "technology stewarding" (Wenger et al., 2009, p. 24). The Community Technology Capacity-building conception (Category 6) prioritises empowerment of individuals to make effective use[118] of digital technologies for both individual and community benefit (capacity-building), is more comfortable with technology stewardship and less focussed on an explicit lifelong learning agenda. Critical differences among conceptions in Categories 5, 6 and 7 are summarised atAppendix HH.

Conceptions of learning in each of the seven categories in the outcome space thus described with reference to the three aspects of learning in the study's holistic conceptual framework, the focus now turns to presentation and validation of the outcome space as the collective learning consciousness of GraniteNet.

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[118]   As used by Gurstein (2003) and discussed in Chapter 2.

6.7. Outcome space: The Collective Learning Consciousness of GraniteNet

The categories of description of learning in GraniteNet are presented in the study's phenomenographic outcome space as a set of structurally related, qualitatively different ways that learning is seen and experienced by respondents, and as such, represents the collective learning consciousness[119] of GraniteNet at the time of the study. The diagrammatic representation of the study's outcome space in Figure 6-36 illustrates the high-level structural relationships among conceptions in the seven categories, each of which is represented by a uniquely coloured circle[120]. The conception of learning in each category is mapped in relation to the other categories in the outcome space in terms of its structure of awareness:

- An awareness of the physical and virtual GraniteNet spaces, represented in the diagram as (a continuum of awareness indicated by the dual-headed, horizontal black arrow at the top of the diagram.
- The structure of awareness of learning in GraniteNet in relation to these physical and virtual spaces, indicated by the large, light blue chevron arrows to the right of the diagram.

The smaller, darker blue chevron arrows in the diagram illustrate developmental trajectories between and among the different conceptions, in terms of an expanding awareness of the affordances of GraniteNet's physical and virtual spaces, of the possibilities of digital information communications technologies for learning and, in some cases, transformed conceptions and experiences of learning in GraniteNet.

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[119]   As explained in Chapter 3, the phenomenographic outcome space is often referred to in phenomenographic research as the "collective mind" (Marton, 1995, as cited in Hasselgren & Beach, 1997, p. 193), the "collective intellect" (Barnard, McCosker& Gerber, 1999, p. 220) or the "collective consciousness" (Bruce, Pham & Stoodley, 2002, p. 8)of the target population.
[120]   Unique colours allocated to each category correspond to the colours used to differentiate conceptions in the diagram in Figure 6-1.
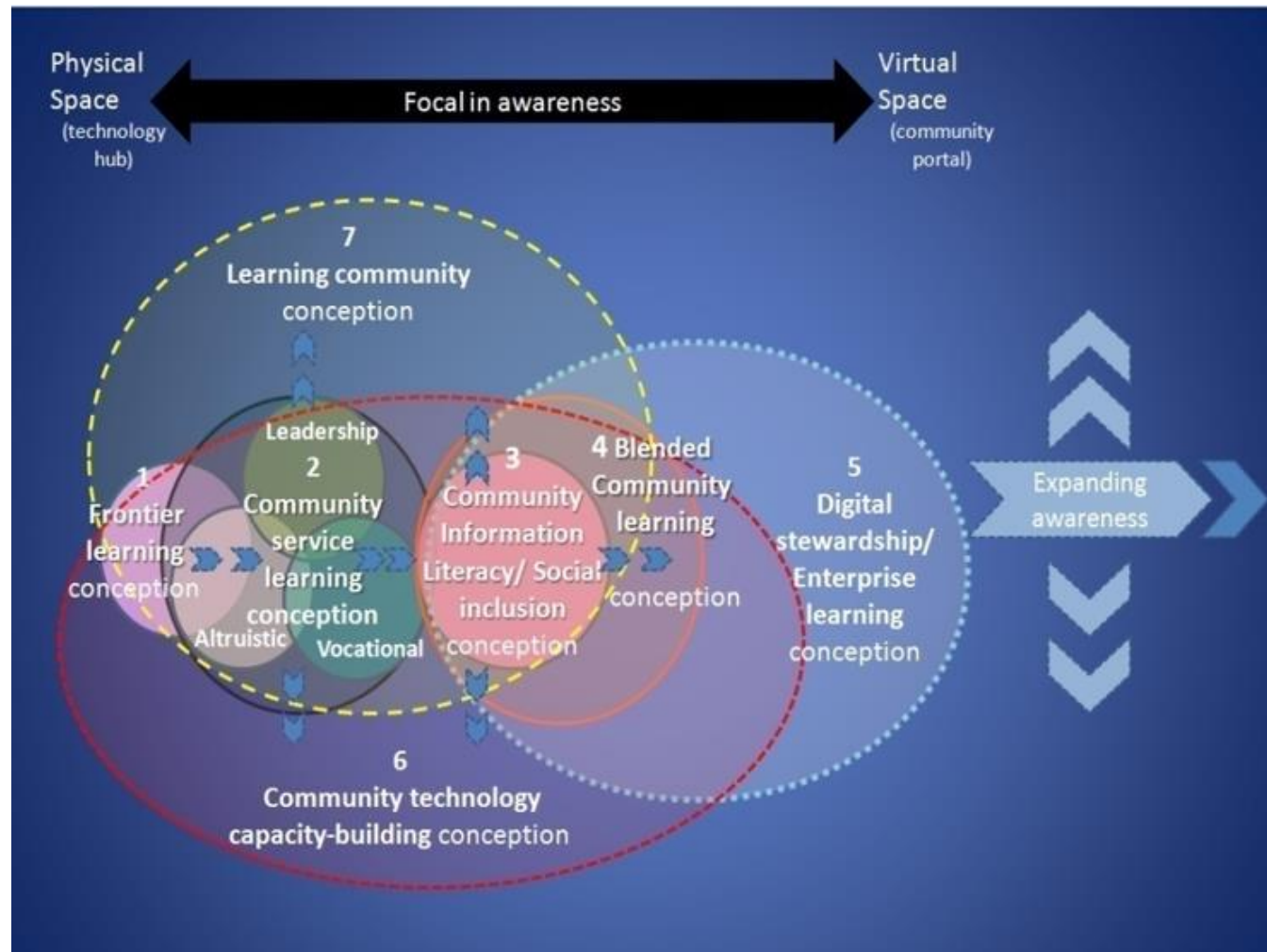
Figure 6-36 Outcome space: The collective learning consciousness of GraniteNet.

Starting at the left of the outcome space diagram in Figure 6-36 and orientated in the physical space of GraniteNet's community technology hub, the Frontier Learning Conception (Category 1) is illustrated by the small, mauve circle located at the far left. This represents a conception of learning situated in GraniteNet's physical space (experienced as a "technology school") and an experience of learning about and learning to use digital technologies as individual acquisition of knowledge and skills in a single content domain (digital literacies), thus representing a Seniors kiosk Customer perspective of learning in GraniteNet. The small, blue chevron arrows indicate movement to the right from the Frontier Learning conception towards the (Community) Service Learning Conception (Category 2), represented by the black-rimmed circle with its three variations—Altruistic, Vocational and Leadership emphases—represented by the mauve-grey, green and blue-green circles respectively contained within the larger black-rimmed circle. These arrows illustrate a developmental trajectory from an experience of learning as acquisition of basic digital literacies in the Frontier Learning conception (Category 1) towards an experience of learning as participation in GraniteNet's community of practice (Category 2). Also reflected by these arrows is an expanding awareness of the learning possibilities and affordances of digital technologies and of supporting the digital literacy learning of others (reflecting Category 2's Provider perspective).

The conception of learning is thus transformed from learning as individual acquisition of knowledge and skills in a single content domain to learning as both an individual and collective phenomenon situated in a community of practice. This transformed experience of learning involves an experience of learning as acquisition, participation and development, comprised of learning across multiple content domains, including content related to personal development learning, leadership learning, and vocational learning. The overlap between the Frontier Learning conception in Category 1 and the Altruistic emphasis of the (Community) Service Learning conception in Category 2 reflects a shared conception of learning about and learning to use digital technologies as "conquering a technology frontier". For individual respondents whose conception of learning in GraniteNet reflects the (Community) Service Learning—Altruistic conception, this represents either a vicarious or a first order personal experience of learning, or both.

From the (Community) Service Learning conception (Category 2), chevron arrows show movement in two directions. Firstly, movement towards the right indicates an expanding awareness of the GraniteNet community web portal (towards the pink Community Information Literacy/Social Inclusion Conception) and its affordances for community engagement and social inclusion, and even further, for community learning (reflected in the orange-coloured Blended Community Learning conception). Arrows indicating movement towards the upper and lower outer areas of the diagram further towards the red Community Technology Capacity-building Conception and the yellow Learning Community Conception in Categories 6 and 7 represent an expanding awareness of GraniteNet as a community capacity-building and lifelong learning project and also of the affordances of GraniteNet and digital technologies for whole-of-community development, capacity-building and lifelong learning.

Shown at the centre of the outcome space diagram, and as such reflecting an awareness of the interface between GraniteNet's physical and virtual spaces (at the centre of the physical-virtual space continuum illustrated by the dual-headed, horizontal black arrow at the top of the diagram), the Community Information Literacy/Social Inclusion conception (Category 3) and the Blended Community Learning conception (Category 4) constitute the Communities of Interest Cluster. In these categories, GraniteNet is experienced as a mechanism for social inclusion through digital inclusion, with a strong focus on Community Information Literacy (Category 3) and an awareness of the affordances of the GraniteNet community portal and digital technologies for community engagement, participation and learning (Category 4). Vertical and horizontal blue chevron arrows indicate a developmental trajectory from the Community Information Literacy/Social Inclusion conception of learning in Category 3 as acquisition of digital community information literacies and local community knowledge linked to participation in one or more communities of interest to a conception of learning in the Blended Community Learning conception in Category 4 as participation in hybrid communities and networks of interest and practice[121]. The blue chevron arrows indicating further horizontal movement to the

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[121]   Distinctions made between communities of interest, communities of practice and networks of interest and practice are explained in the review of conceptions of learning in the Community Informatics literature in Chapter 2 and also elaborated in the discussion in Chapters 6 and 7.

right from these two conceptions in the Communities of Interest cluster indicate an expanding awareness and developmental trajectory from the Blended Community Learning conception in Category 4 to the Digital Stewardship/Enterprise Learning conception in Category 5. Arrows indicating vertical movement in both directions towards the Community Technology Capacity-building and Learning Community conceptions (Categories 6 and 7) reflect an expanded awareness of the affordances of digital technologies for community capacity-building and lifelong learning respectively.

To the far right of the diagram, represented by the light blue-coloured circle, is the conception of learning most oriented to the digital space and most removed from the physical GraniteNet space: the Digital Stewardship/Enterprise Learning conception (Category 5). This conception experiences GraniteNet as a community web portal, and therefore reflects an expanded awareness of the virtual GraniteNet space, and hence a more sophisticated understanding of the opportunities of the GraniteNet community web portal and digital technologies for community learning and digital inclusion "in a technical sense"[122] from the perspective of the Technology Steward (Wenger et al, 2010). As such, it is inclusive of and expands on both the Community Information Literacy/Social Inclusion conception and its expanded Blended Community Learning conception. However, it is not inclusive of an awareness of the Community Service Learning conception nor of the Frontier Learning conception, with their focus on individual and collective learning in the physical GraniteNet space. Hence, there is limited overlap between Categories 1 and 2 on the left and Categories 3, 4 and 5 on the right. Along with the Community Technology Capacity-building conception (Category 6) and the Learning Community conception (Category 7), the Digital Stewardship/Enterprise Learning conception represents the Developer perspective of learning in GraniteNet. Together, these three categories constitute the Community Development Cluster and represent an expanded, whole-of-community orientation, albeit with distinctly different conceptions of learning in GraniteNet.

Thus, in the study's outcome space, the logical and inclusive relationships among conceptions in the seven categories are described and "the significance of the

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[122] This term was sourced from the data as a respondent's utterance articulated in the interview.

categories of description is exposed within the similarities and differences described by the entire categorisation" (Barnard et al., 1999, p. 219), representing the collective learning consciousness of GraniteNet at the time of the study.

6.8. Validating the Outcome Space

6.8.1. Mapping conceptions back to respondents: "Finding the category in the concrete, individual case"

As the final step in the ten-step data analysis process outlined in Chapter 4, the seven categories representing the identified conceptions of learning in GraniteNet were mapped back to the study's respondents. Mapping conceptions back to individuals helps to validate the outcome space by demonstrating a logical correlation between combinations of conceptions of learning in GraniteNet identified for individual respondents, as reflected in their interview transcripts and mind maps, and their particular roles in GraniteNet's operations. Although this final step is not standard practice in phenomenography (Akerlind, 2012), the author is in agreement with Svensson (1997) as to the importance of "being able to find the category in the concrete, individual case" and that this represents "an important knowledge" in phenomenographic studies (Svensson, 1997, p. 171):

> An important knowledge concerns the relation of the meaning of the general category to the individual cases. This is so from the perspective of generalisation and use of the categories of description. The more extensively the role of the general in relation to the specific case is described, the better is the validity and the basis for generalisation and theory development (Svensson, 1997, p. 170).

The procedure undertaken for this backwards mapping exercise involved going back to each individual respondent's completed data analysis template containing the original identification of conceptions from the interview transcripts along with supporting quotations and comparing this content with the descriptors and supporting quotations for each conception in the study's outcome space, as presented earlier in this chapter. The next step was to highlight the contents of individual respondents' data analysis templates—primarily quotations from their interview transcripts—with the relevant colour of each conception as originally presented in the octagonal diagram

at the beginning of this chapter in Figure 6-1. As an outcome of this final stage of the phenomenographic data analysis, the seven conceptions of learning in GraniteNet mapped back to individual respondents with reference to the case study diagram reveal "the specific flavours, the scents, and the colours of the worlds of the individuals" (Marton & Booth, 1997, p. 114) as they have been characterised in the categories of description, as illustrated in Figure 6.37.

GraniteNet Case Study Schematic
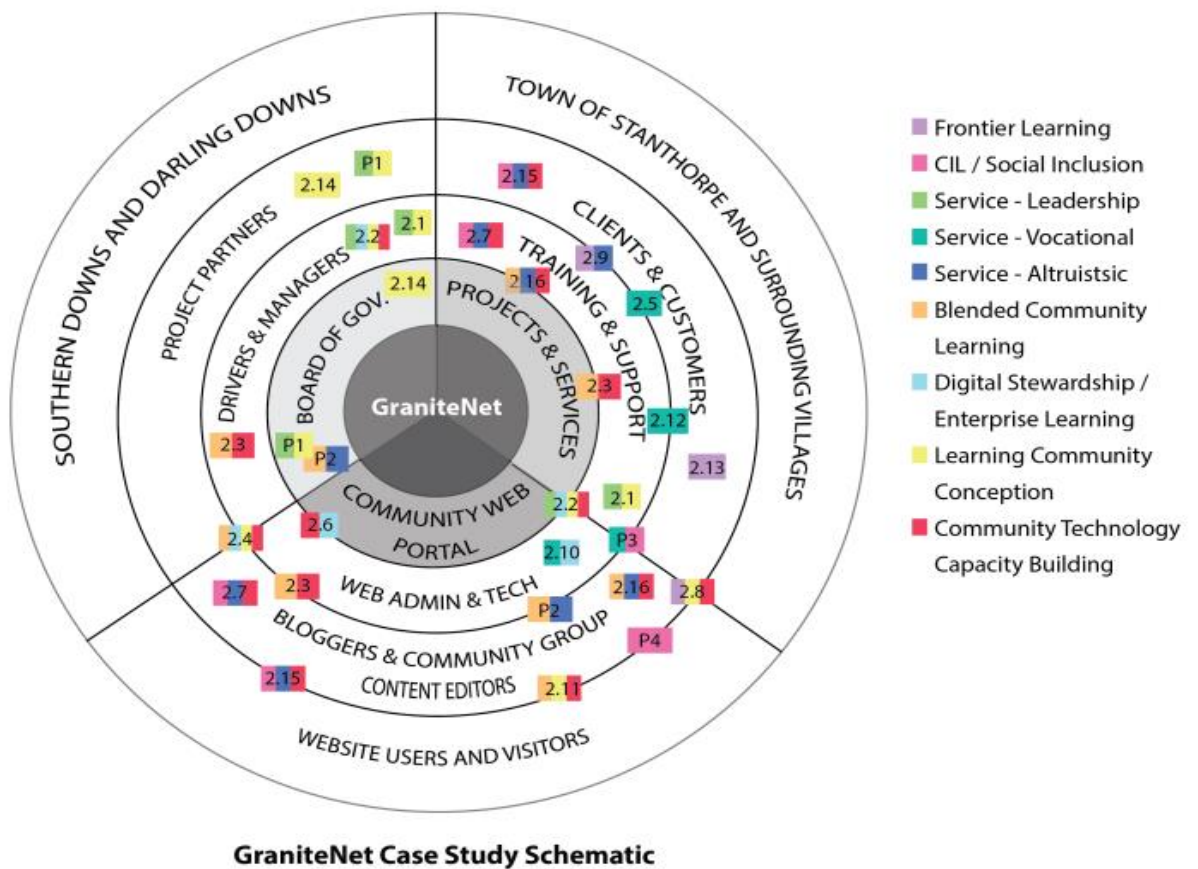
Figure 6-37   Mapping conceptions back to respondents in the case study schematic revealing the colours of the individual worlds.

In the diagram one can see, for example, that the mauve-coloured Frontier Learning conception—as the rarest conception of learning identified among respondents in the sample, is reflected in conceptions of only three respondents located in the case study schematic in "Clients and customers" (2.13), "Training and Support" (2.9) and "Community Group Content Editor" (2.8) roles, which is a logical outcome of the sample including only two respondents who were Seniors kiosk customers (one of whom was also a community group Content Editor). It is interesting to note,

however, that expressing this conception of learning in GraniteNet does not appear to preclude the respondents who are GraniteNet volunteers (2.9 and 2.8) from contributing to the delivery of community technology services in both physical and virtual environments respectively, alluding to the powerful forces of social participation and altruistic motivations for learning about and learning to use digital technologies.

Also, one would also expect to see the green (Community) Service-Leadership and Learning Community conceptions clustered in the "GraniteNet Inc. board of governance-Project drivers and managers" area of the case study schematic, with the Vocational conception in the service delivery areas ("Projects and Services-Training and Support") and the Digital Stewardship/Enterprise Learning conception in the "Community web Portal-web admin and tech" area of GraniteNet's operations, which is the case. Similarly, the pink Community Information Literacy/Social Inclusion and orange Blended Community Learning conceptions are reflected in respondents located in the "Community Web Portal—Bloggers and Community Group Content Editors" area of the case study schematic, which is also logical. However, one would not expect to see both conceptions in the Communities of Interest Cluster (CIL/Social Inclusion and Blended Community Learning conceptions) reflected in a single individual respondent, as the conceptions in these categories are mutually exclusive in that they constitute a clear developmental trajectory from a focus on using the GraniteNet portal primarily for community information to using it primarily for blended community learning. Therefore, an individual is unlikely to clearly express both conceptions simultaneously, as the Blended Community Learning conception is inclusive of, and expands on, the Community Information Literacy/Social Inclusion conception.

The turquoise Digital Stewardship/Enterprise Learning conception is reflected in five of the respondents with the highest level of technical expertise (P3, 2.2, 2.4, 2.6, 2.10) who are primarily associated with the operations of the community web portal, which makes sense. It is interesting to note that only one of these respondents also expresses the (Community) Service Learning-Leadership conception, and that is respondent 2.2, whose conception profile is a unique combination of (Community) Service Learning-Leadership, Community Technology Capacity-building, Learning Community and Digital Stewardship/Enterprise Learning. This in itself points to a

unique set of skills, attributes and ways of seeing the world required of those undertaking a leadership role in Community Informatics as digital stewardship (Wenger, 2009). It also points to a possible human resource weakness in the organisation in terms of the longer term sustainability of the community web portal component of GraniteNet in the event of only one individual possessing these skills and qualities and expressing these perspectives.

Thus, the identified categories can be found "in the concrete, individual case" (Svensson, 1997, p. 171), with interesting results and implications for applying the knowledge generated to further understand the dynamics of learning in GraniteNet. On this basis, a determination can be made as to the *prima facia* validity of the study's outcome space. In addition, mapping conceptions of learning in GraniteNet back to respondents in the case study schematic in Figure 6.37 reflects the diversity and combination of conceptions and experiences of learning constituting the collective learning consciousness of GraniteNet at the time of the study, revealing a tantalising glimpse of the " the colours of the worlds of the individuals" (Marton & Booth, 1997, p. 114)[123] as they have been characterised in the categories of description, but "abandoned" in the phenomenographic analysis.

6.8.2. Judging the quality of the outcome space and acknowledging its limitations

Phenomenographers claim that the "rigour and success of the research lies in being able to reach the point of constructing the outcome space based on evidence from the data" (Bruce, 1990, p. 6) and that the outcome space should be able to stand up to scrutiny in terms of its distinctiveness, logical and inclusive relationships and parsimony (Marton & Booth, 1997). The findings presented here have demonstrated rigour in that the categories of description in the study's outcome space have been clearly demonstrated to be based on the data (respondents' interview transcripts and mind maps) and have also been able to be located in the "concrete, individual case" (Svensson, 1997, p. 171).

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[123]   Marton and Booth (1997) disagree, emphasising that although "individuals are seen as the bearers of different ways of experiencing a phenomenon, and as the bearers of fragments of different ways of experiencing that phenomenon", the description reached by the phenomenographic researcher is a description of variation at the collective level at which "the individual voice is not heard" (p. 114).

With reference to the criterion of distinctiveness, it has also been demonstrated that "each category tells us something distinct about a particular way of experiencing the phenomenon" in question (Marton & Booth, 1997, p. 125)—in this case, about a particular way of experiencing learning in GraniteNet. Thirdly, "the categories have to stand in a logical relationship with one another" (Marton & Booth, 1997, p. 125), which is normally hierarchical in nature in terms of specificity, complexity or inclusivity. It is clear that the categories of description as they are represented in this study's outcome space diagram demonstrate such logical and inclusive relationships in terms of both the meaning and structure of awareness of learning in GraniteNet, although they do not claim to be strictly hierarchical in the sense that one particular way of seeing or experiencing learning in GraniteNet can be said to be "preferred over all others" (Marton & Booth, 1997, p. 126). Indeed, considering the study's unique setting in the context of informal, community learning, the absence of a definitive hierarchy of more or less desirable conceptions of learning in GraniteNet is not seen to be a weakness of the study.

To achieve parsimony, Marton and Booth (1997, p. 125) maintain that the "critical variation in the data" should be captured in "as few categories" as possible, based on their premise that "the number of ways of experiencing any phenomenon in the world is limited" (p. 126). They also emphasise that "the system of categories can never be claimed to form an exhaustive system", but that they "should be complete in the sense that nothing in the collective experience as manifested in the population under investigation is left unspoken." (Marton & Booth 1997, p. 125). It is this characteristic of the phenomenographic approach that has proven to be most problematic for the researcher due to the complexity of the data and the multi-layered nature of the results requiring interpretation at various levels of analysis within the single site case study. This is related both to the holistic nature of the study's conceptual framework and to the scope and complexity of the phenomena under investigation and their context. Notwithstanding these limitations, considering the high degree of complexity inherent in the study, the quality of the outcome space, in terms of its parsimony, distinctiveness, and logical and inclusive relationships among categories of description and their conceptions, supports the researcher's claims about both the rigour and success of the research. The reader is the judge of the extent to which communicative validity has been achieved in their presentation.

6.9.   Conclusion

The chapter began with presentation of the findings of the phenomenographic study in answer to the two stated research questions in the form of seven distinct and logically related conceptions of learning in GraniteNet identified in the data. These constitute the seven Categories of Description in the study's outcome space, organised into four groupings: A Seniors Kiosk Customer perspective; a Community of Practice Group; a Communities of Interest cluster and a Learning Community cluster. Each of the seven categories of description was then presented and explained in detail with reference to referential and structural components of the conception and experience of learning reflected therein, supported with reference to respondents' mind maps and with illustrative quotations from respondent interview transcripts. The structural relationships among the categories of description were mapped in the study's outcome space in terms of a structure of awareness of the physical and virtual GraniteNet spaces, conceptions and experiences of learning in GraniteNet in relation to these physical and virtual spaces, and conceptions of learning in terms of an expanding awareness and experience of the possibilities of GraniteNet and digital information communications technologies for individual empowerment and community learning. Particular attention was paid to differentiating conceptions in the seven categories with reference to identified dimensions of variation and critical differences.

Conceptions and experiences of learning in GraniteNet articulated in the seven categories of description were then mapped back to respondents in the sample with reference to their roles in and relationship to GraniteNet's organisational structure, services and activities and physical and virtual spaces, demonstrating a logical correlation. The quality of the outcome space was evaluated with reference to established criteria for judging the quality of phenomenographic research, confirming the rigour and success of the research whilst also highlighting the challenges presented by its complexity. The study's findings in response to the stated research questions have thus been presented for interpretation by the reader. A discussion of the findings is now presented in Chapter 7 with reference to the knowledge gaps identified in Chapter 2 with a view to identifying contributions to knowledge. This is followed by consideration of their implications in Chapter 8.

Chapter 7.
Interpretation and Discussion of Findings: Understanding, facilitating and accounting for learning in GraniteNet

Ideas are not segregated; they do not form an isolated island. They animate and enrich the ordinary course of life (Dewey, 1916).

7.1. Introduction

Chapter 6 presented the findings of the phenomenographic investigation into learning in GraniteNet in answer to the two stated research questions designed to illuminate the experience of learning from the learner's perspective. Seven qualitatively distinct, yet structurally related ways of seeing and experiencing the content, processes and context of learning, including learning about and learning to use digital technologies, were presented as seven categories of description in the phenomenographic outcome space. In conjunction with the case study report in Chapter 5, these findings are now interpreted and discussed with reference to the problem of understanding, facilitating and accounting for learning in GraniteNet. Specifically, the focus is on:

- understanding the kinds of valued knowledge(s), skills and capabilities across various content domains developed by respondents in the context of their involvement in GraniteNet and their experiences of the related learning processes

- accounting for these learning outcomes and explaining these learning processes in terms of what makes significant and valuable learning possible, and

- considering implications for facilitating learning with respect to core conditions and environments for learning.

The chapter begins with a discussion of what the findings tell us about what GraniteNet participants say they are learning – that is, their conceptions of the *content* of learning—with reference to learning across seven broad, interrelated content domains, mapped to categories of description in the study's outcome space presented

in Chapter 6[124]. These seven domains of learning content are then presented in a conceptual framework that highlights both the significant and valuable[125] learning content at the intersections of particular content domains and the centrality of learning in the Technology/Socio-technical domain to learning in GraniteNet. As part of the elaboration of conceptions of this learning content, reference is made to related learning processes and also to conditions for learning afforded by GraniteNet as the learning context and environment. This approach acknowledges that the *what* and *how* of learning—although separated for the purposes of analysis, and at times, discussion – cannot be ontologically separated and as such, highlights important links "between the type of learning and the ways of acquiring it" (Schugurensky & Mundel, 2005, p. 14). It also acknowledges the holistic nature of the conception of learning reflected in the study's conceptual and analytical framework, where the learning content, process and context are seen to be co-constitutative with respect to individuals' conceptions and experiences of learning in GraniteNet.

The focus then moves specifically to the question of what the findings tell us about the processes and mechanisms of learning in GraniteNet in terms of what makes learning possible for participants in this context. Six primary learning processes are highlighted, with social participation identified as the over-arching incentive for, and mechanism of, learning in GraniteNet. A typology of learning grounded in the phenomenographic findings is presented that theorises the nature of individual and collective informal learning in GraniteNet and highlights how the significant educative effect of participation in associational life and volunteer work is magnified for the digital age by a learning-based approach to Community Informatics. At each stage of the discussion, points of particular interest are elaborated with reference to each of these different learning aspects and important contributions to knowledge highlighted,

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[124]   It is coincidental that the analysis of respondents' conceptions and experiences of learning as they were discovered in the data revealed seven categories of description in the outcome space and the subsequent interpretation reveals seven areas of learning content (content domains). Therefore, the reader should not infer a correspondence between each of the categories in the outcome space and one of the seven areas of learning content.

125   The reader is reminded that, for the purposes of this study, significant and valuable learning is not only learning that is considered significant by scholars because it involves "changes in the self", such as "expansive, transitory and transformative learning" for example (Illeris, 2006, p. 45), but also learning that "furnish[es]…direct increments to the enriching of lives" (Dewey, 1916, Chapter 18: Educational Values, 2. The Valuation of Studies, para 2) and/or serves an instrumental purpose for the learner in terms of being a means to a desired or valued end (Dewey, 1916).

including both those that confirm earlier research findings reported in the literature and those that add new perspectives and insights to this knowledge base.

For researchers reporting empirical studies of informal learning such as this, communication and discussion of findings and their implications constitutes a "hazardous passage" (Stake, 2005, p. 455) of knowledge from researcher to reader with significant challenges presented for the "communicative validity" and "confirmability" of the findings (Sin, 2010, p. 307) by the sheer scale, diversity, complexity and pervasiveness of the phenomenon under investigation (Duguid, Mundel, & Schugurensky, 2013; Livingstone, 2001, 2010; McGivney, 2006). Therefore, to enhance communicative validity, the discussion seeks to communicate to the reader "the most pertinent dimensions" (Livingstone, 2013, p. xiv) of learning identified in the data in a way that balances the need for analytical separation with acknowledgement of the holistic nature of the phenomenon under investigation.[126] The confirmability of the interpretations presented in this chapter is maximised by ensuring that they are supported with reference to examples from the empirical data (that is, the phenomenographic findings in Chapter 6 and supporting data from the case study report in Chapter 5)[127].

In presenting the following interpretation of the study's findings, the researcher accepts and encourages the reader's acceptance of the phenomenographic premise that by learning about all the different ways that other people see and experience the world and phenomena in the world – including this researcher's own perspective unavoidably reflected in the interpretation of the findings, "we will learn what the world is like and what the world could be like" (Marton & Booth, 1997, p. 13).

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[126] The challenges presented for the study with respect to holism and complexity were discussed in section 3.5.2 of Chapter 3

[127] The reader is referred throughout the chapter to the detailed descriptions of respondents' conceptions and experiences of learning in each of the seven categories in the study's outcome space presented in Chapter 6, and the supporting evidence provided for this analysis in the form of respondents' own narratives and mind maps, and also to demographic and other data in the case study report in Chapter 5.

7.2.   What are GraniteNet Participants Learning? Learning across Seven Interrelated Content Domains

Phenomenographic analysis of respondents' conceptions and experiences of the learning content—that is, conceptions of what they are learning in the context of their involvement in GraniteNet—revealed significant and valuable learning for respondents in a diverse range of content areas, as reported in the study's outcome space in Chapter 6. Table   7-1 presents this learning content organised into seven content domains, mapped to their relevant categories in the study's outcome space in which this content is thematised, with the content domains most pervasive across all categories in the outcome space listed before those linked to conceptions in fewer categories[128]. The examples of specific learning content listed for each domain are drawn from the data and mapped to the conceptions of learning in the categories in which the experience of this content is reflected. In addition to the categories traditionally used to describe learning content in formal education settings, such as knowledge, skills and attitudes, for example, the conception of learning content in Table   7-1 uses "much more far-reaching categories" (Illeris, 2007, p. 74) to reflect the breadth and depth of meanings, understandings and dispositions inherent in respondents' own expressions of their learning.

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[128]   The order in which the content domains is listed does not imply that learning content reflected in conceptions in fewer categories in the study's outcome space is any less significant.

Table   7-1
Content Domains and their Specific Content Mapped to Categories in the Phenomenographic Outcome Space

Content Domains	Specific Content	Conceptions of learning in GraniteNet
1. Technology/Socio-technical	• Digital literacies (basic and more advanced) including learning about and learning to use digital technologies for a range of purposes • (Digital) Community Information Literacy • GraniteNet Content Editor Skills Set • Web design/development • Programming skills • Technology stewarding • Community Informatics	Cat 1: Frontier learning conception Cat 2:(Community) service learning conception Cat 3: Community Information Literacy/Social inclusion conception Cat 4: Blended community learning conception Cat 5: Digital stewardship/Enterprise learning conception Cat 6: Community technology capacity-building conception Cat 7: Learning community conception
2. Learning	• Understanding and facilitating adults' (digital literacy) learning • Meta-learning (learning about one's own learning), including digital meta-learning • Community Information Literacy (learning about one's own and other people's information needs) • (Blended) Community learning • Informal learning • Action Learning/Action Research • Lifelong learning	Cat 2: (Community) service learning conception Cat 3: Community Information Literacy/Social Inclusion conception Cat 4: Blended community learning conception Cat 5: Digital stewardship/Enterprise learning conception Cat 6: Community technology capacity-building conception Cat 7: Learning community conception
3. Community	• Civic engagement/participatory democracy • Local community knowledge (Community Information Literacy) • Blended community learning • Community Informatics • Community Development • Community Learning	Cat 2:(Community) service learning Cat 3: Community Information Literacy/Social inclusion conception Cat 4: Blended community learning conception Cat 5: Digital stewardship/Enterprise learning conception Cat 6: Community technology capacity-building Cat 7: Learning community conception
4. Special Interest	• Knowledge and skills in the specialised domain of the Community of Interest (CoI) (includes digital technologies/computing and local community as special interest areas)	Cat 3: Community Information Literacy/Social Inclusion conception Cat 4: Blended community learning Cat 5: Digital Stewardship/Enterprise learning
5. Vocational	• Vocational competencies and literacies (various occupational fields) • Career development learning • Enterprise learning	Cat 2B: (Community) service learning conception – Vocational emphasis Category 5: Digital Stewardship/Enterprise Learning conception
6. Personal/Relational	• Self-efficacy, self-confidence, personal agency, personal development • Generic and 'soft' skills (such as interpersonal and communication skills, social competence, social literacy, social awareness • Leadership	Cat 1: Frontier Learning conception Cat 2: (Community) service learning conception
7. Organisational/Associational	• Organisational knowledge and know-how • Participatory democracy • Organisational governance, management, administration (community-based) • Organisational development	Cat 2: (Community) service learning conception

The conception of the learning content in each domain is now briefly described. Conceptions of the content of learning in categories of description in the

study's outcome space presented in Chapter 6 constitute the supporting evidence for this categorisation and interpretation.

7.2.1. The content of learning in the Technology/ Socio-technical domain.

As shown in Table 7-1, learning content in the Technology/Socio-technical domain is reflected in conceptions of the content of learning in all seven categories in the study's outcome space and refers to the use of digital technologies and the internet, including digital literacies and other digital learning content related to participation in socio-technical environments[129]. In this study, GraniteNet's physical, virtual and hybrid environments, viewed through a learning lens, constitute the socio-technical learning environment. Specific content includes learning about and learning to use digital technologies for a range of purposes as basic and more advanced digital literacies, as reflected in conceptions of the learning content in the Frontier Learning and (Community) Service Learning conceptions in Categories 1 and 2.

Also included are digital Community Information Literacy (Category 3) and the GraniteNet Content Editor Skills Set (Category 4). Knowledge, understandings, skills and technology literacies in web design and development, programming, and technology stewarding reflected in Category 5 constitute a kind of literacy that " typically includes selecting and configuring technology, as well as supporting its use the practice of the community" (Wenger et al., 2009, p. 25). Other socio-technical learning content identified in the data includes learning how to leverage digital technologies for community and lifelong learning (Categories 4 and 7) and for community development (community technology capacity-building), also known as Community Informatics (Category 6). As such, these findings about the content of learning in the Technology/Socio-technical domain contribute to answering the second research question about how GraniteNet participants and portal users experience learning about, and learning to use, digital technologies for a range of individual and community purposes.

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[129]   The term "socio-technical environment" (Fischer, Rohde, & Wulf, 2009, p. 77) refers to an environment in which there are "productive combinations of social relations and information communications technologies" (Resnick, 2002, p. 649).

7.2.2. Learning content in the Community domain.

As illustrated in Table 7-1, learning content in the Community domain is reflected in conceptions of the content of learning in all categories in the outcome space with the exception of the Frontier Learning conception in Category 1. Learning in the Community domain is about the acquisition of local community knowledge and understandings and the development of skills and dispositions for participating effectively in and contributing to local community processes and activities. These community processes and activities can be categorised under the broad headings of civic engagement, which refers to people's active participation in local community and associational life, and participatory democracy, which refers to "the institutional arrangement" that makes "collaborative public action"— as a form of civic engagement—possible (Schugurensky, 2013, p. 160). In this study's findings, learning content in the Community domain is specific content related to respondents' participation in GraniteNet as a local community organisation and community web portal and, by extension, their participation in local community life. Specific content includes local community knowledge, Community Information Literacy, organisational governance and community engagement and development processes focused on promotion of digital inclusion and lifelong learning. As such, learning in the Community domain interfaces with learning in the Technology/Socio-technical domain, reflecting the social shaping of technology through community (Wenger et al., 2009), and vice-versa, and also with learning in the Organisation/Associational and Learning domains.

7.2.3. Learning content in the domain of Learning

Also reflected in six of the seven conceptions of learning in GraniteNet is learning content in the domain of Learning. This learning content includes: learning about adult learning as reflected in the (Community) Service Learning conception in Category 2; learning about how to use information to facilitate personal and others' learning and understanding one's own and others' information needs, as reflected in the Community Information Literacy/Social Inclusion conception in Category 3; learning about different kinds of informal, organisational and community learning processes and methodologies as reflected in Categories, 4, 5,

6 and 7; and understanding one's own learning, or meta-learning[130], as reflected in conceptions of learning in Categories 2, 3 and 4 and most prominently in the Vocational emphasis of the (Community) Service Learning conception in Category 2. These findings about learning content in the domain of Learning contribute to knowledge about learning , both as a phenomenon linked to adults' growing capacity for metacognition and reflexivity in the interests of understanding and furthering their own learning and as a defined field of knowledge and practice linked to Adult Community Education. These contributions to knowledge are elaborated in subsequent sections of the chapter and their implications discussed in Chapter 8.

7.2.4. Learning content in the Special Interest domain

Learning in the Special Interest domain involves learning related to hobbies and leisure activities and is reflected in the two conceptions of learning in the Communities of Interest cluster in categories 3 and 4, and also in the Digital Stewardship/Enterprise Learning conception in category 5. As described in the case study report in Chapter 5, the study's respondent sample extends beyond volunteers involved in management and delivery of on-site services and community members accessing those services to include its broader customer base of; local community groups and organisations registered with GraniteNet and listed on the Community Groups pages; community group Content Editors, responsible for editing their community group's web page/s on the GraniteNet portal; and other individuals accessing and using the community web portal for their own community-related purposes. The findings show an important area of learning identified for these participants to be learning in the specialised domain(s) of their respective community or Communities of Interest (COIs) (Fischer et al., 2009), with examples reflected in the data including photography, field naturalists, cycling, bridge, public speaking, permaculture, art and computers and associated digital technologies.

7.2.5. Learning content in the Vocational domain

Learning content in the Vocational domain is most prominently reflected in the conception of learning in the Vocational emphasis of the (Community) Service

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[130]   The term "meta-learning" refers here to an awareness of one's own learning, in the sense that personal learning is "thematised" by the learner that is, "explicitly talked about and discussed [as] the object of conscious planning and analysis" (Saljo, 1979 as cited in Richardson, 1999, p. 56), and is similar to the concept of metacognition (Illeris, 2007).

Learning conception in Category 2, where learning is experienced as building individual capability in specific job-related skills linked to vocational and career-related goals whilst contributing the work of GraniteNet as a helping organisation. In the GraniteNet study, the findings show vocational learning to be focused primarily in three occupational areas related to the nature and focus of GraniteNet's work: Business Administration, Information Technology and Community Services[131]. The content of learning in the Vocational domain also involves development of career management skills linked to career development learning ((McIlveen, et al., 2011) and enterprise learning (Garlick, 2014; Garlick & Langworthy, 2004), which is reflected in the conception of the learning content in the Digital Stewardship/Enterprise Learning conception in Category 5.

7.2.6. Learning content in the Personal/Relational domain

Learning content in the Personal/Relational domain is reflected in conceptions of the learning content in the Frontier Learning conception in Category 1 and in all three emphases of the (Community) Service Learning conception in Category 2. It includes personal development learning and learning related to understanding and getting along with others, in the sense of what Mezirow (2009) refers to as participating in "communicative discourse" (p. 91) in the context of community and associational life and volunteer work. This conception of personal development learning is one in which the "self" can be seen as "learning content" (Illeris, 2007, p. 69). An important area of personal development learning at the intersection of learning in the Personal/Relational and Organisational/Enterprise domains is organisational leadership learning, which is discussed in more detail in sub-section 7.2.2.2.

7.2.7. Learning content in the Organisation/ Associational domain

Last, but certainly not least, learning in the Organisation/Associational domain—strongly linked to learning in the Personal/Relational domain—is highlighted for all three emphases in the conception of learning in Category 2, with

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[131]   These occupational areas correspond to industry sectors linked to nationally recognised vocational qualifications and related training packages in the Australian Qualifications Framework (AQF, 2013).

learning "participatory democracy" (Mansbridge, 1995; Pateman, 1970, as cited in Schugurensky, 2013, p. 160), identified as important learning content. This includes development of "instrumental skills needed for the day-to-day activities of community organisations" (Mundel & Schugurensky, 2013, p. 180) such as governance, administration and organisational skills. Also included is learning about and learning to use computers and the internet for organisational administration and communication (Kavanaugh, 2009; Schugurensky, Duguid, & Mundel, 2010) "in the service of their community goals and functions" (Carroll, 2009, p. 9). As such, learning in the Organisation/Association domain is also strongly linked to learning in the Community domain.

7.2.8. Significant and valuable learning content "across the spectrum of adult learning"

Broadly speaking, the above findings about conceptions of the content of learning in GraniteNet confirm those reported in the literature on learning in associational life and volunteer work based on studies conducted in the UK, Australia, the US and Canada[132] that emphasise the variety of learning opportunities afforded by small-scale voluntary and community-based organisations "across the spectrum of adult learning" (Kerka, 1998, p. 1) along with the breadth, depth and significance of this learning (Field, 2006; McGivney, 2006; Schugurensky et al., 2005; Schugurensky et al., 2010). However, the findings of the GraniteNet study clearly expand on those commonly reported in this literature, showing significant, valuable and pervasive learning for GraniteNet volunteers at the intersections of particular content domains afforded, in part, by GraniteNet's organisational characteristics and culture as a Community Informatics and Learning Community initiative. Further, the findings show the experience of the content learning across the seven content domains to be strongly interrelated and interconnected, with learning in the Technology/Socio-technical domain implicated in learning in each of the other domains in important ways. As such, learning at the intersections of the seven content domains presented in Table 7-1 is particularly significant for understanding and theorising learning in GraniteNet and is now elaborated,

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[132]   Duguid et al. (2013); Elsdon (1995); Evans, Waite, and Kersh (2011); Golding (2005); Ilsley (1990); Kavanaugh et al. (2009); Kerka (1998); Livingstone (2001;2010); Plant (2014); Schugurensky and Mundel, (2005); Schugurensky et al., (2010); Taylor(2006).

beginning with the centrality of learning content in the Technology/Socio-technical domain to learning in each of the other domains of learning content.

7.3. What Difference does the Technology Make? The Centrality of Learning Content in the Technology/Socio-technical Domain to Learning in GraniteNet

As shown in Table 7-1, learning in the Technology/Socio-technical content domain is reflected in all conceptions of learning in the outcome space, highlighting this as the most pervasive area of learning content in GraniteNet. For example, the data show that in the Frontier Learning conception in Category 1, learning basic digital literacies affords significant Personal/Relational learning in the form of increased self-confidence and social competence. In the (Community) Service Learning conception (Category 2), developing skills and knowledge in using computers and digital technologies contributes to organisational knowledge and know-how (Organisational/Associational content) and, in the Vocational emphasis (Category 2B), vocational learning in the form of Information and Communications Technology competencies linked to vocational qualifications (Vocational content). In the Community Information Literacy/Social Inclusion conception in Category 3, learning about one's own and others' digital information needs and requirements is an important learning outcome, linking learning in the Technology/Socio-technical and Learning domains. Learning in the Technology/Socio-technical domain is also implicated in learning outcomes in the Special Interest domain in conceptions of learning in Categories 3, 4 and 5 where learning about and learning to use digital technologies is a special area of interest for these community volunteers who are expressing this conception of learning. Finally, as reflected in the conceptions of the content of learning in Categories 2, 4, 5, 6 and 7, learning about how to facilitate other people's digital literacy learning, the GraniteNet Content Editor Skills Set and learning about the affordances of digital technologies for community learning and development are significant areas of specific learning content at the intersections of the Technology/Socio-technical, Learning and Community domains. Figure 7-1 illustrates these areas of significant learning content showing learning in the Technology/Socio-technical domain implicated in learning each of the other content domains.

Understanding and facilitating adults' digital
literacy learning **(Cat 2)** and how digital
technologies can be used for community
learning and development **(Cats 4,5,6,7)**

Increased confidence and
social competence due to
acquisition of basic digital
literacy skills **(Cat 1)**

GraniteNet Content
Editor Skills Set **(Cat 4)**

Personal/
Relational

Learning

Organisational
knowledge and
know-how related to
knowledge and use
of digital
technologies **(Cat 2**

Organisation/
Associational

Technology/
Socio-technical

Community

Vocational

Special
Interest

Community
Information Literacy
(learning about
one's own and other
people's community
information needs
(Cat 3)

Vocational competencies linked to
qualifications (Information and
Communications Technologies)
(Cat 2B)

Interest-based knowledge and skills
development in the special interest area of
digital technologies **(Cats 3,4,5)**

Figure 7-1   Learning content in the Technology/Socio-technical domain central to and implicated in learning in all other content domains.

This finding about the centrality of learning in the technology/Socio-technical domain to understanding and accounting for learning in GraniteNet provides support for theorising in the literature on learning in Community Informatics that emphasises the symbiotic relationship between communities, learning and socio-technical environments (Carroll, 2009; Wenger et al, 2009), where digital technologies are seen as "an end result of, as well as a means to accomplish, community learning" (Bishop, Bruce & Jones, 2009, p. 4). As will be highlighted in subsequent sections of this chapter and included in the discussion of implications of the findings in Chapter 8, these findings also add weight to assertions about the reciprocal nature of the relationship between learning and ICTs (Candy, 2004), between digital technologies and communities (Carroll, 2009; Wenger, White, & Smith, 2009) and between digital information literacy, lifelong learning and active citizenship (Alamelu, 2013; Bruce, Hughes, & Sommerville, 2012; Candy, 2004; Erstad, 2008; Ramalho Correia, 2002). Thus, the question of 'what difference the technology makes' to learning in GraniteNet is central to this study's contribution to knowledge, and is further elaborated in the discussion of learning at the intersections of the Technology/Socio-Technical, Personal/Relational, Community and Learning domains in sub-headings 7.4.4 and 7.4.5.

7.4.   Significant and Valuable Learning Content at the Intersections of Other Content Domains

In addition to showing learning content across all seven content domains to be interrelated through the centrality of learning in the Technology/Socio-technical domain, the findings also reveal learning content at the intersections of other content domains to be highly significant. For example, personal development and organisational leadership learning, which are recognised both in this study's findings and in the reviewed literature as being a particularly important area of learning in associational life and volunteer work, are at the nexus of learning content in the Personal/Relational and Organisation/Enterprise domains. Vocational and career development learning, reflected in the conception of learning in the Vocational emphasis of the (Community) Service Learning conception in Category 2B and representing a significant area of learning content for this conception, is at the nexus of the Organisational/Enterprise and Vocational content domains. Facilitation of adult's digital literacy learning, revealed in the study's findings to be a significant area

of learning content in the (Community) Service Learning conception, is at the nexus of the Personal/Relational and Learning domains. Learning content in the areas of Community Information Literacy, Community Informatics and community learning are all at the nexus of the Learning, Community and Technology/Socio-technical content domains, which together represent conceptions of the content of learning across six of the seven categories in the outcome space. Blended community learning (Category 4) and technology stewarding (Category 5), as the two most technically advanced conceptions of learning in GraniteNet, reflect learning content at the intersection of the Community, Technology/Socio-technical and Special Interest domains. Finally, at the nexus of the Vocational, Technology/Socio-technical and Special Interest domains, is learning content related to digital technologies as a special interest area, including ICT competencies, digital meta-learning and technology stewardship. Figure 7-2 shows these areas of significant learning content at the intersections of these content domains.
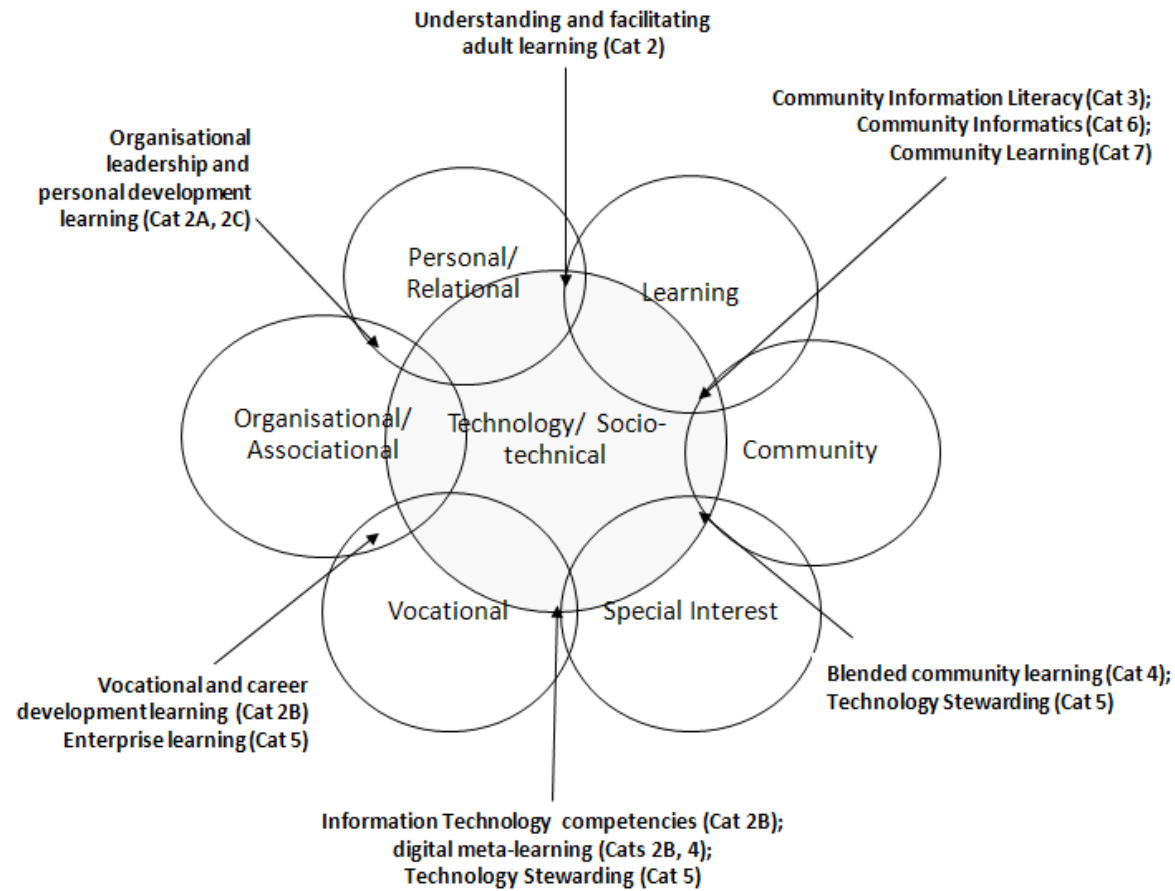
Figure 7-2   Significant learning content at the intersections of adjacent content domains mapped to categories in the outcome space.

Important insights reflected in the findings about content of learning at the intersections of particular content domains are now discussed with reference to relevant literature to identify contributions to knowledge. Where they are considered to be particularly important for the discussion, links are made between this learning content and related learning processes, thus addressing the question of how the process of learning in GraniteNet is experienced, linked to the stated research questions, and making the all-important links "between the type of learning and the ways of acquiring it" (Schugurensky, 2005, p. 14).

7.4.1. Significant personal development learning at the intersection of the Personal/Relational and Organisation/Associational domains

As shown in Table   7-1, the (Community) Service Learning conception, with its Altruistic, Vocational and Leadership emphases, is the home of learning in the Personal/Relational and Organisation/Enterprise content domains. As illustrated in Figure 7-1 and Figure 7-2 the study's findings show learning in the Personal/Relational and Organisation/Enterprise domains to be interrelated and co-dependant, providing the crucible for significant personal development learning in GraniteNet. The data show that for some GraniteNet volunteers, as expressed in the (Community) Service Learning conception in Category 2, learning in the Personal/Relational domain is evidently significant and reflects the high levels of individual, personal learning and development reported in the literature as being "the first and most important" learning mentioned by "an overwhelming majority" of community volunteers in empirical investigations into learning in community and voluntary work (Elsdon, 1995 as cited in Schugurensky et al., 2010, p. 83). This includes learning in the following specific content areas, each of which is reflected in this study's findings for the (Community) Service Learning conception, as detailed in Chapter 6[133]:

- Personal growth, confidence, empowerment and agency (Duguid et al., 2013; Elsdon, 1995; Plant, 2014).

- Development of dispositions and changes in values and attitudes (Duguid et al, 2013; Mundel & Schugurensky, 2013; Schugurensky, 2013).

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[133]   Refer to the description of the (Community) Service Learning conception in Chapter 6 for supporting evidence of this specific learning content in the Personal/Relational domain.

- Development of communication and interpersonal skills (Duguid et al., 2013; Elsdon, 1995; Livingstone, 2001).

- Increased ability and willingness to shoulder responsibility and take on leadership roles (Elsdon, 1995; Schugurensky et al., 2010).

- Development of social awareness, social competence and social literacy (Cox, 2000, p. 1; Duguid et al., 2013; Field, 2005, p. 150; Livingstone, 2001; Schugurensky et al., 2010).

Analysis of the conception of the content of learning in this category links learning to participation in local community and associational life, and, more specifically, to contributing to the work of GraniteNet, seen as a helping organisation, in the interests of digital and social inclusion[134]. In the GraniteNet study, understanding how others experience digital technologies, including their experiences of the digital divide and digital literacy learning—categorised in the findings under "Facilitation skills" in the content domain of Learning—was identified as a significant learning in the Altruistic emphasis in the conception of the learning content Category 2. This corresponds with the "dispositional learning" reported by Mundel and Schugurensky (2013) and Duguid et al. (2013), as a significant learning outcome for volunteers in their studies, which they characterise as increased "social awareness" (Duguid et al., 2013, p. 229) and "development of empathy towards other community members" (Mundel & Shugurensky, 2013, p. 185). These findings both confirm and expand on the findings of earlier studies of learning in volunteer work and associational life by demonstrating how a learning-based approach to community development (GraniteNet as a Learning Community project) interfaces with a community-based approach to digital inclusion (GraniteNet as a Community Informatics project) to afford significant and valuable learning for community volunteers in the digital era. This contribution is now elaborated, with reference to key learning processes and affordances identified in the data in answer to the question of how GraniteNet participants and portal users experience the learning process – that is, the 'how' of learning.

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[134]   Refer to Figure 6.8 in chapter 6 for examples from the data supporting this interpretation.

7.4.1.1. *Learning processes and affordances in the Personal/Relational and Organisation/Associational domains*

The data show that learning in the (Community) Service Learning conception, which is the home of learning in the Personal/Relational and Organisation/Associational domains, is experienced as participation in collective, communal activities where learning across a number of content domains is afforded through engagement in work practices and supporting the learning of others in the GraniteNet community technology hub, which can be characterised as a kind of "place-based community of practice" (Somerville & McIlwee, 2011, p. 326). Wenger, White and Smith (2009) maintain that "all communities of practice are orientated to their members' learning experiences" (p. 96) but note that "in some cases, serving a specific context becomes central to the community's identity and the way it operates" (p. 96). With its heritage as both a Learning Community initiative and local Community Informatics project[135], GraniteNet is oriented to serving the local context through supporting the digital literacy learning of community members as its "joint enterprise" (Wenger et al., 2009, p. 192). A the same time, the organisation is focused on supporting the learning of its members—GraniteNet's volunteers—in the areas of digital inclusion, adult learning and community technology capacity-building as the shared domain of knowledge and practice[136] (Wenger et al., 2009). The GraniteNet community technology hub is thus able to be conceptualised as a Community of Practice—hence the attribution of "Community of Practice Group" as a label for this category in the study's outcome space[137].

7.4.1.2. *Participation in organisational practices as the mechanism for personal and relational learning*

The data show the processes and mechanisms of learning in the (Community) Service Learning conception in Category 2 are experienced as contributing to these work practices through practical "learning by doing" (Duguid et al., 2013, p. 230;

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[135]   Described in detail in the case study report in Chapter 5.
[136]   Refer Section 6.3.3 in Chapter 6 and specifically, Table 6.10 for examples in which this conception of GraniteNet is articulated.
[137]   Refer to the (Community) Service Learning Conception in the Community of Practice Group as Category 2 in the list of categories of description and their respective groupings presented in Table 6.1.

Shugurensky et al., 2010, p. 90), involving trial and error[138], individual and collaborative problem-solving, opportunistic observation and imitation of more knowledgeable or competent peers or experts, and being "thrown in at the deep end" and having to "sink or swim". Learning is also experienced as a strongly relational and reciprocal phenomenon ("a two-way street"), with teaching others digital literacy skills – experienced through an altruistic filter—highlighted as by far the richest, most enjoyable and most rewarding learning experience[139].

> *I learn more doing it for somebody else rather doing it for myself. It doesn't stick, up here in my brain, when I'm doing it for myself, but if I'm helping someone else out, then it sticks with me longer, if that makes sense…. I wouldn't get much satisfaction if I'd done it for myself.*

7.4.1.3. *Core conditions for significant personal and relational learning in the GraniteNet technology hub CoP*

Ideal conditions for learning in the GraniteNet CoP, as reflected in conceptions of learning in the (Community) Service Learning conception in Category 2, include being able to contribute to the work of the helping organisation by taking responsibility for completion of a variety of tasks in a supportive learning and working environment that affords opportunities for relational learning (as a "two-way street") by collaborating with co-workers in the delivery of digital inclusion services to clients and customers. With respect to the affordances of GraniteNet as the learning context and environment, the data show relational aspects of GraniteNet to be strongly thematised in this category, with GraniteNet experienced as a "family", a "social network" and a caring or helping organisation[140]. Thus, learning is afforded by both the availability of learning opportunities and the "quality of relationships in the workplace" (Eraut, 2011, p. 187). This includes the learning affordances normally found in a Community of Practice: That is, learning situated in the performance of

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[138] Eraut (2004) prefers the term "trying things out" which he distinguishes from trial and error by the learner's "intention to learn from the experience" (p. 187), which is more along the lines of Dewey's (1916) conception of experiential and experimental learning. Eraut (2011) also uses the term "deliberative learning" to describe this kind of learning. The term "trial and error" as it is used here reflects this intentionality.

[139] Refer to the description of the three emphases in the (Community) Service Learning conception in Chapter 6 for supporting examples of this experience of the processes and mechanism of learning.

[140] Refer to the description of the Altruistic emphasis in the (Community) Service Learning conception in Chapter 6 for supporting evidence.

organisational practices, learning with and from peers and more expert others as "legitimate peripheral participation", and a focus on supporting the learning of all members of the community (Lave & Wenger, 1991; Wenger et al, 2009).

The data also show evidence of the importance of what Mezirow (2009) refers to, with reference to Habermas (1981, as cited in Mezirow, 2009, p. 92), as having "equal opportunity to participate in the various roles of discourse". The findings of this study show this participation to be afforded by the infrastructure and practices of participatory democracy, on the one hand, and on the other hand, by an organisational culture or "micro-climate" (Eraut, 2011, p. 186) that supports risk-taking where the learner is reasonably confident of their chances of success[141]. This is also a function of individuals' own levels of personal agency, self-confidence and self-efficacy—as qualities the individual brings to the learning setting (Eraut, 2004)—and the extent to which the working environment actively supports this kind of personal development learning[142]. These findings support Elsdon 1995, p. 120) assertion that "high levels of individual learning and development, and of group learning and development, go together with an organisation's commitment to learning and social or caring objectives"—an assertion that that is further supported in the discussion of organisational leadership learning later in this chapter and one that this study's findings confirm continues to hold sway for learning in associational life and community volunteer work in the digital era.

Barriers to learning include those reported in the literature on learning in associational life and volunteer work related to what Eraut (2011) refers to as "the allocation and structuring of work" (p. 192), whereby the fluid, and at times, ad-hoc nature of community organisations run entirely by volunteers can result in discontinuities in participation resulting in a disorganised working environment that can negatively impact on workplace learning opportunities (Duguid et al., 2013; Eraut, 2011; Livingstone, 2010). This is well articulated by GraniteNet volunteers in the following terms:

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[141]   Refer to the description of the Altruistic emphasis in the (Community) Service Learning conception in Chapter 6 for supporting evidence for this interpretation.
[142]   Refer to Table 6.5 for supporting evidence from the data.

There is no paid employee; it's all relying on volunteers. As a new volunteer, it's really confronting in a way. You say "my god, what's going on here?" You would like to have some directions from either [Shirley] or [Glen]. They are busy, they are really busy, so there is no structure for new volunteers to make them feel they are welcome and are needed and that's what I have to do. You have to figure it out yourself. So you either swim or sink.

...organising the other volunteers here at Granite Net. A lot of time people don't know when other people are showing up. It creates a lot of problems throughout, which then leads to too many people here on one day, which then leads to wasting time when we could be doing something else.

Also related to the challenges of managing volunteers, issues of continuity and quality of service delivery impact on the experience of learning in GraniteNet:

I come in and you never have the same person – they're all so different in teaching. The young ones seem to really have more patience than the older people and they somehow explain it a little bit easier….

Thus, there are aspects of the GraniteNet environment that constitute both learning barriers and learning affordances.

7.4.1.4. *Significant personal and relational learning afforded by participation in face-to-face and blended learning environments*

It is significant that the phenomenographic analysis of respondents' conceptions and experiences of learning identified learning in the Personal/Relational domain are concentrated in the (Community) Service Learning and Frontier Learning conceptions positioned to the left in the study's outcome space diagram in Figure 6-36, where GraniteNet is perceived as the physical space (technology hub) and experienced as a "family", "social network", "friendly workplace" and "technology school". This finding provisionally supports perspectives in the literature that suggest that significant personal and relational learning outcomes, such as self-confidence, personal agency, interpersonal skills and social literacy, are most likely to be afforded by participation in environments that "enable direct face-to-face contact" (Candy, 2004, p. 4; Illeris, 2007) or that "combine digital interaction with offline encounters" that enable "friendship, reciprocity and trust" to develop (Field, 2005, p. 140).

7.4.1.5. *The trajectory from learning as individual acquisition to learning as participation in collective practices via legitimate peripheral participation in the GraniteNet CoP*

As illustrated in the outcome space diagram in Figure 6-36 the data show a learning trajectory from an experience of learning in the Frontier Learning conception in Category 1 as individual acquisition of knowledge and skills in a single content domain (digital literacy) in a dedicated learning environment (technology "school"), where learning is 'de-situated' from its authentic practice contexts, towards an experience of learning as participation in GraniteNet's technology hub Community of Practice (CoP), reflected in the Altruistic emphasis of the (Community) Service Learning conception in Category 2. Reflected in the conception of learning in the Frontier Learning conception, the experience of learning through observation of more expert others in the "relaxed environment" of the GraniteNet community technology hub is indicative of a form of "legitimate peripheral participation" Lave & Wenger, 1991, p. 29 in the GraniteNet technology hub CoP, whereby learning is afforded through exposure to, interaction with and support from more knowledgeable others, or experts.

> *"Just watching the people here that have been at GraniteNet before, observe what they are doing and how they have done it and give it a go, see my chance. At the moment, I'm still waiting for my turn—once my confidence is up …."*

This learning trajectory also includes a heightened awareness of the potential of digital technologies to improve the quality of life of older community members[143], indicative of shared meaning and identification with the organisation's digital inclusion mission and therefore, potentially, legitimate peripheral participation in the organisation's practices, thus representing an enriched learning experience. This is also reflective of the way that community volunteering helps to meet the contributive needs" of older adults, as identified by McCluskey (1974, as cited in Findsen, 2006). The conception of learning is thus potentially transformed on this trajectory from learning as "de-situated" individual acquisition of knowledge and skills in a single content domain to situated learning as both an individual and collective phenomenon,

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[143] This is characterized in the findings as the respondent second order perspective for the Frontier Learning Conception as outlined in Chapter 6.

involving acquisition, participation and development across multiple content domains. The primary mechanism for enabling this learning trajectory is to leverage the respondent second order perspective[144] in the Frontier Learning conception—that is, imagining how digital technologies could be used to improve the quality of life of frail aged community members—to afford situated, relational learning by providing targeted community volunteering opportunities.

7.4.2. Organisational leadership learning at the intersection of learning in the Personal/Relational and Organisation/Associational domains

As shown in Table 7-1, organisational leadership learning is identified as specific content in the Personal/Relational domain reflected in the conception of learning in the Leadership emphasis of the (Community) Service Learning conception in Category 2. Considered one of the most significant areas of learning in community-based volunteering (Elsdon, 1995; Ilsley, 1989, 1990; Kavanaugh et al., 2009; Schugurensky et al., 2010), organisational leadership learning is at the intersection of learning in the Personal/Relational and Organisation/Associational domains. The findings show the content of learning in the Leadership emphasis of the (Community) Service Learning conception in Category 2C to reflect an altruistic focus "orientated towards the common good" (Schugurensky et al., 2010, p. 90), a focus common to all three emphases in the conception of learning in this category. Also reflected as learning content are: organizational governance and operations; financial administration; management of volunteers; advocating on behalf of the organisation in the broader community; and an increasing awareness of relationships with community stakeholders. There is also evidence of increased self-awareness and self-confidence as a significant learning outcome[145], as illustrated in this quotation:

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[144] Refer to the discussion in section 6.8.1 for a more detailed discussion of the respondent second order perspective discovered in the data.

[145] Refer to the description of the Leadership emphasis of the (Community) Service Learning conception in Chapter 6.

The biggest point in my time here at Granite Net, the biggest personal change in my time here at Granite Net applies to straightforwardly, my self-confidence. I've gone from being somebody, who "thought I could", but not really sure; to somebody who knows that they can, simply because I was backed by a number of people that gave a damn, who provided a little shove in the right direction which I needed and who trusted, not only my word, but trusted my being; who I was and how things have evolved from there.

These findings reflect the range of skills and dispositions categorised under the broad heading of community and organisational leadership in the literature on learning in volunteer work reported by Schugurensky et al., (2010), Duguid et al., (2013) and Akingbola, Duguid & Viveros, (2013). These studies identify leadership as an important area of learning reported by community volunteers as a result of being exposed to new situations that required them to take on a leadership position, noting that the conception of leadership expressed was situated in a context of teamwork and "equality among peers" (Duguid et al., 2013 p. 126). These perspectives of leadership learning correspond with learning in the Leadership emphasis of the (Community) Service Learning conception in Category 2, where GraniteNet volunteers assuming leadership roles develop a heightened awareness of how the organisation is perceived in the broader community[146] as well as increased levels of self-confidence and personal efficacy as a result of "stepping up" and taking on leadership roles or responsibilities.

7.4.2.1. *Organisational leadership learning as individual and collective empowerment*

Of particular significance for this study is that the conception of learning in the (Community) Service Learning—Leadership conception of learning in GraniteNet reflects a conception of leadership learning as both an individual and a collective phenomenon, whereas for the Altruistic and Vocational emphases, individual, personal learning is focal in awareness[147]. As illustrated in Figure 5.8, the experience of learning in the (Community) Service-Leadership conception is of "stepping up", with the learning frontier being organisational leadership and the key learning questions, "What can we do? How can we do this?" reflecting a conception of learning as a collective

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[146] Identified as the respondent second order perspective in the Leadership emphasis of the (Community) Service Learning conception in Category 2C.

[147] Refer to the descriptions of the three emphases in the (Community) Service Learning conception in Chapter 6 for examples from the data.

phenomenon situated in the activity of leading the community organisation. In this way of seeing and experiencing, learning is situated, intentional, incidental and collaborative, involving action learning and experimentation, requiring learners to take responsibility, assume leadership, and in doing so, take personal risks. Learning through experience and collaborative problematizing that involves having to "think outside your normal square" are also learning characteristics that are focal in awareness in this conception, with evidence of significant personal and organisational development learning occurring as a result of this engagement.

These findings support theorising in the literature about community and group leadership as a "situated" (Falk & Mulford, 2001, p. 225), "collective, relational and cultural phenomenon" (Kirk & Shutte, 2004, p. 215;) involving both individual and "collective empowerment" (Rogoff, 2003, p. 239) characterised by an increased understanding and awareness of self in relation to organisational and community contexts linked to transformative learning at both individual and organisational levels (Duguid et al., 2013; Mundel & Schugurensky, 2013). The findings also closely reflect theorising in the literature on learning in social movements, including Community Informatics, where collective learning is described as being primarily informal, experiential learning involving collaborative inquiry and problem-solving that both results from and facilitates collective social action (Carroll & Farooq, 2009) and connecting with those beyond the group (Crowther, 2006; Hustinx & Lammerton, 2003; Jesson & Newman, 2004). This learning is characterised by differential levels of individual preparedness for and experience of learning and with a significant learning related to participation in social movements being learning that social change is possible (Rogers & Haggerty, 2013), which Bruner (2012) refers to as "cultivating the possible" by "generating and testing possibilities" for change (p. 29):

> *We are not getting people through the door for some reason" – that was a significant thing of learning how we could alter the perception that had unfortunately become GraniteNet at the time… Learn to do things properly, how to run things and how to change the whole atmosphere… Learning that there are times that we really have to put our thinking caps on. That's when I realised the only way to go forward is to sort the mess out; is to know…. And if I couldn't think of something, go and learn how. Learn: "What can we do? How can we do this?"*

Relational aspects of the learning environment are as crucial to supporting individual leadership learning as they are for other personal development learning, however leadership learning also relies on a stronger identification with the organisation as a collective identity. These findings support those in the literature on associational life and volunteer work about the mutually beneficial, cyclical and collective nature of volunteers' informal learning in community organisations that emphasise a strong link between the quality and trajectory of individuals' learning and engagement and the well-being of the organisation (Duguid et al., 2013; Elsdon, 1995; Shugurensky et al., 2010). In the case of GraniteNet, individuals' identification with the organisation's "social and caring objectives" (Elsdon 1995, p. 120) along with a concern for its precarious circumstances as a "risky business" and a willingness to "step up" and take significant personal risks in the interests of the organisation's survival appear to provide the catalyst for organisational leadership learning in GraniteNet. Thus, this study's findings confirm theorising about individual and collective leadership learning in the literature on learning in associational life, volunteer work and social movements.

7.4.3. Learning at the intersections of the Vocational, Organisational/Associational and Personal/Relational domains: Vocational, career development and enterprise learning

As summarised in Table   7-1, learning in the Vocational domain includes learning specific content related to particular jobs or occupations, as building individual capability, career development learning and enterprise learning. The term capability is used here to refer to an individual's level of knowledge and ability, or know-how, in a particular occupational or vocational area, along with their willingness, personal agency and personal efficacy to leverage this for the purposes of achieving desired goals. This includes "what individual persons bring to situations that enables them to think, interact and perform" (Eraut, 2004, p. 182). As such, it overlaps with, and is dependent on, learning content in the Personal/Relational and Organisational/Associational domains. In this conception, the experience of learning includes a heightened awareness of personal learning linked to formal training and vocational goals or employment experience, and engagement in reflection on one's own learning, including how learning undertaken in the context of GraniteNet relates

to learning undertaken in other settings, primarily formal vocational education and training programs[148].

Going beyond a conception of vocational learning as the development of specific, work-related competencies, this learning can be conceptualised as a form of career development learning, which refers to "learning about self and learning about the world of work" (McMahon, Patton & Tatham, 2003, p. 6) and includes learning about one's own learning, reflection and "meta-learning" (Illeris, 2007, p. 45) with reference to personal, vocational and career-related goals. In the case of GraniteNet, the data show this "meta-learning" to be primarily focused on personal development learning[149] and digital literacy learning[150], and therefore also linked to learning in the Personal/Relational and Technology/Socio-technical domains. Career development learning also involves the learner's self-assessment of knowledge and skills, appraisal of the work context in which the learning is situated and reflection on both of these in terms of their own personal career development and career development learning (McIlveen et al., 2011):

> *I would eventually like to continue on to "Certificate Four", but I'm not in an Admin. job. I think "Certificate Three" is probably enough, but I find, now that I have started learning in the last couple of years, I really like it. I'm not sure that it is something that I will end up using, because I am quite happy in an Admin position, but I just liking learning.*

> *Because I'm also in a Business Admin course so everything that I learn in that also relates to what we do here. I try and get as much feed-back as possible in every aspect that I think I need to learn.*

Also related to vocational and career development learning, Enterprise learning, as reflected in the Digital Stewardship/Enterprise Learning conception in Category 5, refers to learning the enterprising attitudes and behaviours required for the development of personal and professional networks linked to career development and, in particular, to the "reputation building" aspect of the digital stewardship role

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[148]   Refer to the description of the Vocational emphasis of the (Community) Service Learning conception in Chapter 6 for supporting examples from the data.
[149]   Refer to the description of the content of learning for the (Community) Service learning in Chapter 6.
[150]   Refer to the description of the Vocational emphasis in Chapter 6.

(Wenger et al., 2006, p. 29). Such "enterprising abilities" include being strategic, able to "formulate ideas" and to translate these into "meaningful outcomes" (Garlick & Langworthy, 2004, p. 15) for both personal and community benefit through strategic, "enterprising action" (Garlick 2014, p. 69)[151]. Such strategic, enterprising action is characteristic of "technology stewarding" in "digital habitats", as theorised by Wenger et al. (2009, pp. 24-33), and is clearly reflected in the Digital Stewardship/Enterprise Learning conception of learning in GraniteNet:

> *I have always been interested and involved in IT and have always dabbled in web development a little bit, for personal things. I think that what GraniteNet has enabled me to do is to take that to the next step….*
>
> *It was just the "geek" in me to find out what kind of on-line resources were in the community or if there was an on-line community....*
>
> *Since GraniteNet I have been referred to so many different people who need websites. So ever since my first involvement with Granite Net, I haven't stopped working on websites…. Of course, I learn things when I am trying to do other things….*

7.4.3.1.   *Significant vocational and career development learning for younger GraniteNet volunteers*

Of interest is that findings in the literature on learning in associational life and volunteer work typically discuss vocational and enterprise learning with reference to younger adults, or youth learners, linked to their multiple life and career transitions. These findings from the literature suggest that younger people have extensive involvement in informal learning linked to multiple transitions (Livingstone, 1999 as cited in Livingstone & Scholtz, 2010), that learning is a stronger motivator for volunteering than it is for older volunteers (Schugurensky et al., 2010), and that they are more likely than older volunteers to "value the knowledge and career-related experience they acquire" through volunteering (Rumsey, 1996, as cited in Schugurensky et al., 2010, p. 83). These perspectives on younger volunteers' learning are reflected in the GraniteNet findings, with both the case study findings (Chapter 5) and phenomenographic findings (Chapter 6) clearly pointing to a strong Vocational emphasis in conceptions of learning among respondents in the two younger age-groups

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[151]   Refer to the description in in Section 5.3.4.1 in Chapter 5 of the Digital Stewardship/Enterprise Learning conception of learning (Category 5).

in the study's respondent sample[152]. Moreover, the analysis of respondent characteristics in the case study description in Chapter 5 locates these respondents in the context of GraniteNet's activities in Set C: "Technology hub technical volunteers and community group content editors", which indicates a primary focus on learning as building individual capability in the Technology/Socio-technical domain. This orientation is further supported in the phenomenographic findings in Chapter 6, whereby the Vocational emphasis is found to reflect a "digital native" perspective of digital technologies, distinguished from a "digital immigrant" perspective (Prensky, 2001, p. 1) reflected in conceptions of digital technologies in all other categories in the study's outcome space[153].

> *I have always been using them. I feel that if I picked up any kind of technology, I would be able to use it and learn how to use it very quickly.*

The conception of learning in the Vocational emphasis is also differentiated from other conceptions in the Community of Practice Group by its learning intentionality, in the sense that learning – as building individual capability—is the primary object of activity (noesis)[154], supporting the claims in the literature on learning in volunteer work about learning being a stronger motivator for volunteering for younger volunteers (Schugurensky et al., 2010):

> *Being at Granite Net, has made me see in myself, compared to what is where I am on in the region of computers. I'm learning all the admin stuff which is what I am trying to do.*

7.4.3.2. *Effective vocational learning as integrative, metacognitive learning*

As illustrated in Figure 6-8 and summarised in sub-heading 6.4.2, the processes involved in vocational learning reflected in the data for the Vocational emphasis of the (Community) Service Learning conception include contributing to the work of the

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[152] As illustrated in the diagram mapping conceptions back to individuals in Figure 6.33, Vocational emphasis of the (Community) Service Learning conception (Category 2C) maps back to respondents P.3, 2.5, 2.10 and 2.12. Information sourced from the questionnaires completed by respondents prior to their interview identifies three of these respondents to be under 25 years of age (as illustrated in Figure 5-9 in Chapter 5) and one aged 39 years.
[153] Refer to the descriptions of the conception of digital technologies in each category in the study's outcome space in Chapter 6 for supporting evidence.
[154] Refer to Appendix U.

helping organisation as participation in the GraniteNet Community of Practice, as described above, and—differentiating the Vocational emphasis from the Altruistic and Leadership emphases—monitoring and benchmarking one's own learning in the area of digital technologies with reference to "signposts"[155]. These signposts are provided, on the one hand, by observation of and feedback from GraniteNet co-workers and mentors[156]—reported by Eraut (2007) as a significant affordance for effective workplace learning – and, on the other hand with reference to codified, vocational competencies linked to formal vocational education programs.[157] This benchmarking affords what Eraut (2004), describes as "mutual enhancement through integrated learning", whereby:

> The more formal knowledge gained in working for a qualification is used to enhance the quality of ongoing informal learning in the workplace, while at the same time using the experience to modify that formal knowledge or make it more usable in yet other workplace situations (Eraut, 2004, p. 67).

Importantly, Eraut (2004) emphasises that this "ideal type of interaction" between informal, workplace learning and formal vocational learning depends on the learner's ability to think "deeply, critically and systematically about workplace practices and experiences" (p. 70). Whilst the data from the GraniteNet study reveal a heightened focus in the Vocational emphasis of the (Community) Service Learning conception on appraisal of the learning undertaken in the context of GraniteNet with reference to vocational goals, they do not necessarily provide evidence of the kind of thinking described above by Eraut (2004). However, the data do show learning in the Vocational domain is experienced as a metacognitive process, involving a kind of "metacognitive monitoring" (Eraut, 2011 p. 182) in the form of (a) benchmarking of one's own skills against those of co-workers and against codified vocational competencies and (b) ascertaining the relevance and usefulness of workplace learning in terms of supporting the achievement of career-related goals:

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[155] Refer to the description of the Vocational conception in Chapter 6.
[156] Refer to the description of the Vocational emphasis in the (Community) Service Learning conception in Chapter 6 for supporting examples from the data.
[157] Refer to the description of the Vocational emphasis in Chapter 6.

> *Leaving one kind of training behind and then go into another set of training. It's a bit challenging, but ….*
>
> *As I said before, what I've learnt "Software" wise', is "Quick Books" and Mod X. I not sure that Mod X would be something, that would go to many other jobs. But "Quick Books" is definitely something that will help with the line of work that I am trying to get into.*

In the case of GraniteNet, the positive relational aspects of the work environment are highlighted in the conception of GraniteNet as the learning context and environment in the Vocational emphasis of the (Community) Service Learning conception, where GraniteNet experienced as a "friendly workplace". This suggests an environment potentially highly conducive to significant personal development, vocational and career development learning:

> *Work colleagues and network for employment and stuff like that and the people that you meet, your friends and acquaintances.*
>
> *The volunteers that work here are very, very polite… they have very nice natures, friendly to work with. It makes it easier to get along in your work place and [they] are very friendly.*

Overall, the findings about significant learning at the intersections of the Vocational, Organisational/Associational, and Personal/Relational domains echo those in the literature on learning in associational life and volunteer work. With respect to theorising about learning in the Vocational domain, they also provide some evidence for theorising about the nature of workplace learning and career development learning and offer some new insights into the affordances of younger adults' volunteering in Community Informatics for significant personal, vocational and career development learning. It is also clear that GraniteNet's constitution as a Community Informatics and Learning Community project with a digital inclusion mission and, related to this, its hybrid, socio-technical learning environments, make a difference to how learning is experienced by diverse participants. The question of what difference this makes to respondents experiences of learning, and how these findings in turn contribute to our understandings about learning in this context, is addressed in the following discussion of learning at the intersection of the Technology/Socio-technical, Community and

Learning domains. It is here that this study makes its most important contributions to knowledge about informal, community learning in the digital era.

7.4.4. Learning at the intersection of the Technology/Socio-technical, Community and Learning domains: A spectrum of community socio-technical literacy practices

As discussed in sub-heading 7.3, summarised in Table 7-1 and illustrated in Figure 7-1, learning in the Technology/Socio-technical domain is central to the experience of learning in GraniteNet. The findings further show that GraniteNet's socio-technical hybridity[158] affords opportunities for development of a range of digital technology skills and literacies. These range from the most basic digital literacies for communicating with family and completing routine work tasks through to an understanding of how digital technologies and the internet can be used to strengthen local, geographic communities (community technology capacity-building) and a "literacy of technology stewardship…a flexible understanding about how digital habitats can serve the learning of communities" (Wenger et al., 2009, p. 184). This learning involves content at the nexus of the Technology/Socio-technical, Community and Learning domains. Specific content at the nexus of the Technology/Socio-technical, Community and Learning domains reflected in conceptions of learning in GraniteNet is summarised in Table 7-2.

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[158] GraniteNet is both a community technology hub (physical space) and a community web portal (virtual space) and has a dual core business of providing individualised digital skills development opportunities on-site and stewarding the community web portal for local community groups (Communities of Interest).

Table   7-2
Content of Learning at the Intersection of the Technology/Socio-technical, Community and Learning
Domains Mapped to Conceptions of Learning in the Study's Outcome Space

Conceptions of learning in GraniteNet	Specific Technology/Socio-technical content (linked to content in the Community and Learning domains)
Category 1: Frontier Learning conception	Basic digital literacies – • learning about and learning to use digital technologies and the internet for communication and recreation (special interest) purposes

Community of Practice Group
 	
Category 2:(Community) Service Learning conception –
 	
    2A: Altruistic emphasis
    2B: Vocational emphasis
    2C: Leadership emphasis
	Basic and more advanced digital literacies –
	• learning about and learning to use a range of digital technologies and applications to complete required tasks in the Community of Practice
	• Learning about the possibilities of digital technologies and the internet for social inclusion
	• Digital meta-learning – learning about your own digital capability and learning in relation to external standards and benchmarks (codified knowledge)
	• Digital meta-learning – learning to manage personal digital literacy learning (sustainability)

Communities of Interest cluster Category 3: Community Information Literacy/ Social Inclusion conception Category 4: Blended Community Learning conception	Digital Community Information Literacy – • Learning to use computers and the internet to access community information • Understanding different information needs and experiences of community members • Learning how to use computers and the internet (and the GraniteNet community portal) to present required information in accessible ways • Learning to use digital technologies to create, store and share community information with others • GraniteNet Content Editor Skills Set – learning to use the GraniteNet Community Groups interface, the Community Calendar and other applications to edit the group's web page, publicise group activities and events, disseminate news and manage group communications. • Learning about the affordances and limitations of digital technologies for community networking and knowledge-sharing in the specialised domain of the Community of Interest (blended community learning) • Digital meta-learning – learning about and learning to manage one's own learning in the area of digital technologies
Community Development cluster Category 5: Digital Stewardship/Enterprise Learning conception Category 6: Community Technology Capacity-building conception Category 7: Learning Community Conception	Digital Stewardship of the GraniteNet community web portal (literacy of technology stewardship) – • Designing, developing and administering the community portal in response to technical specifications and community requirements • Developing (simple, streamlined) processes and procedures for users to follow (Content Editors, GraniteNet 'technical' volunteers) • Providing instruction, advice and support to users (Content Editors, volunteers, local business enterprises) • Troubleshooting ('fixing') problems that emerge; working within and responding to changes in the broader world wide web environment • Responding to changing requirements – developing new functionalities required by users of the online community • Envisioning new opportunities, possibilities for the community portal • Learning how technology can be used to support community development (Community Informatics) • Learning about the affordances of digital technologies and the internet for supporting lifelong learning

This learning content at the intersection of learning in the Technology/Socio-technical, Community and Learning domains can be conceptualised as a spectrum of community socio-technical literacy practices that reflects the structure of awareness of learning in GraniteNet in the study's outcome space in Figure 6-36. From this perspective, literacy is conceptualised as a specific practice, or set of practices (Thorpe & Mayes, 2009) embedded in social contexts. Literacy practices are therefore seen as social practices (Lupton & Bruce, 2010). Further, digital literacy is seen as "a current instantiation of the traditional concept of literacy itself" (Bawden, 2001, p. 21) in the context of the digital era. Critical to this theorising is the recognition that in the digital age, the social contexts in which literacy practices are embedded are essentially socio-technical contexts; that is, "combinations of social relations and information communications technologies" (Resnick, 2002, p. 649). Situated within this broader socio-technical context, GraniteNet is seen as a socio-technical learning environment, with learning experienced both as acquisition of generic skills and as a function of social participation (Wenger 2009) in communities and networks of interest and practice (Fischer et al., 2009). This spectrum of community socio-technical literacy practices is presented in Figure 7-3.
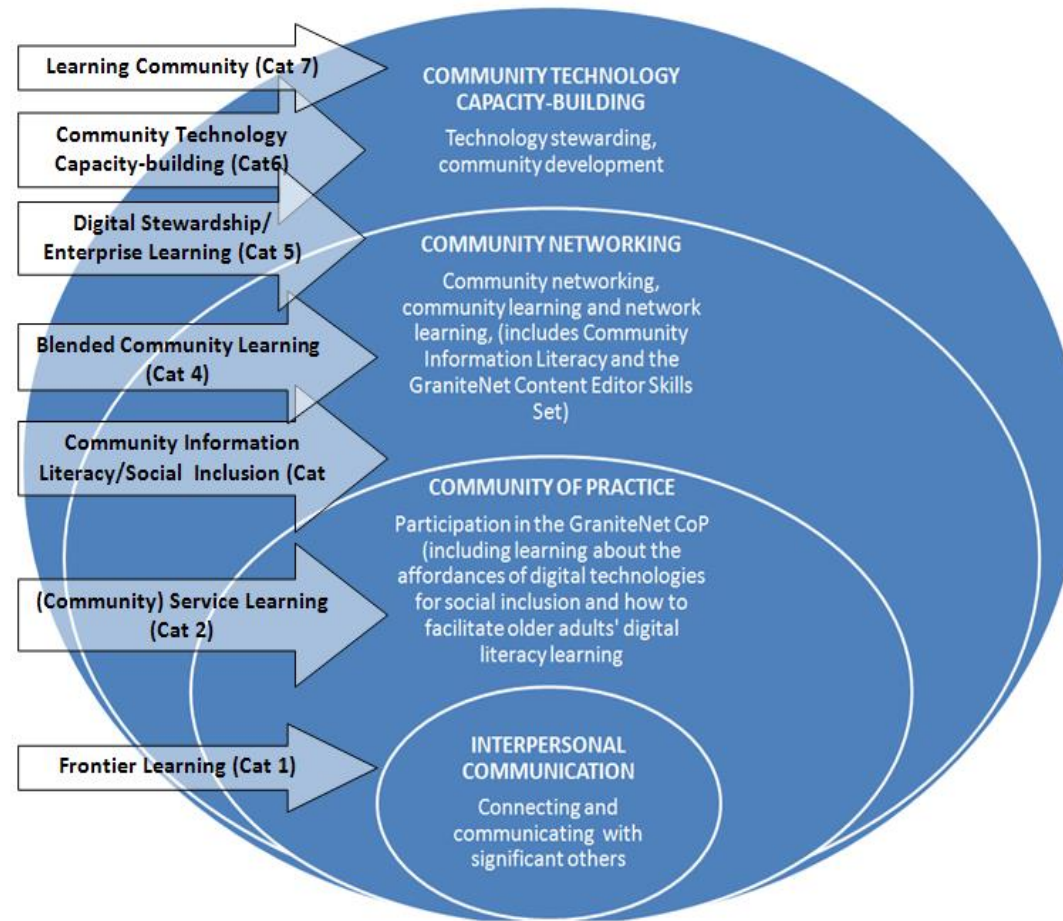
Figure 7-3   Learning about and learning to use digital technologies in GraniteNet: A spectrum of community socio-technical literacy practices.

The experience of learning at each level of the spectrum is now elaborated with reference to the phenomenographic findings, highlighting contributions to knowledge.

7.4.4.1. *Learning digital literacies for interpersonal communication: The experience of learning at the socio-technical frontier*

At the foundation level of the spectrum of socio-technical literacy practices in Figure 7-3 is the practice field of interpersonal communications, as reflected in the Frontier Learning conception of learning in GraniteNet in Category 1. Here, socio-technical literacy practices focus on the practices of using technology to communicate with significant others in a network society and digital world, where "the mutual constitution of social relations and technologies takes place because technological artefacts are enmeshed in our activities and our connections to other people" (Tuominen, Savolainen, & Talja, 2005, p. 330). Consistent with findings from other studies into older adults' learning and digital technologies (Chesters, Ryan & Sinning, 2003; Millar & Falk, 2000; Richardson, Zorn, & Weaver, 2002), motivating factors for digital literacy learning in the Frontier Learning conception relate to a strong desire to maintain contact with family and friends and accessibility of suitable community-based learning opportunities and support services that, together, help to overcome barriers related to fear, anxiety, shame and self-doubt (Stanley, 2010; Richardson et al, 2002)

> *There must be so many lonely people out there that really, like me, I was ashamed of not knowing anything. I would never ask for help. It's only the kids giving me this thing…. I just had to do it.*
>
> *The contact, being in contact with people.*
>
> *Just to see the satisfaction that they get; to know that finally for all the times that their children or grandchildren said, "We need you to get an email or can't we talk to you on Facebook?" It's a joy to see them to suddenly realize that they're not being forgotten; they're not being left behind.*

Further, the findings show that the acquisition of the means and skills by which communication with significant others can be maintained or extended (that is, where friendship, reciprocity and trust are already well-established), affords significant

personal and relational learning in the form of increased levels of self-confidence, social literacy and social competence[159].

> *Coming here, where they have sympathetic volunteers to teach them it's not a frightening thing. Too many of them are scared and it's nice to see… the joy on someone's face and the happiness when they say, "I know how to do this; oh look—I can do this; now can I learn that"*

> *I have done one learning session … with the big guy who helps people in that way. He is a very knowledgeable sort of person. He gives you confidence I must admit.*

> *I got such a kick like last night even, ringing my son and I said, "Oh, I fixed that problem with the email". "Good on you" he said, "send me a text". That's good, I could do it. I've never waited for a pat on the back but it's nice to know that you can actually do it.*

Thus, in the Frontier Learning conception, learning outcomes in the Personal/Relational and Technology/Socio-technical domains are characterised by a complex set of co-dependencies, uncertainties, benefits and risks. The implications of this enmeshment of learning in the Personal/Relational and Technology/Socio-technical domains are discussed further in Chapter 8.

7.4.4.2.   *Socio-technical literacy practices at the organisation/associational level: Participating in the GraniteNet CoP as a hybrid socio-technical practice field*

Moving up from the relational to the associational level in Figure 7-3, the practice context is the GraniteNet technology hub Community of Practice, as reflected in the (Community) Service Learning conception. Here, participation in a broader range of literacy practices includes learning about one's own and others' digital literacy needs and experiences in addition to learning about and learning to use digital technologies to contribute to the helping organisation in the interests of digital and social inclusion by supporting older adults' digital literacy learning. Digital literacy learning at the associational level is therefore both embedded in and a function of social networks and cultural practices, with knowledge linked to human agency in terms of "people's ability to act, participate, and make appropriate and informed decisions in socio-technical environments" (Fischer et al., 2009, p. 77). Edwards,

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[159]   Refer to the description of the Frontier Learning Conception in Chapter 6 for supporting examples from the data.

Ranson, & Strain (2002) speak of "reflexive practices" which they say are "constituted organisationally" and "provide the conditions for reflexive agency…which allow actors to perform and position themselves in exchangeable roles and settings" (2002, p. 534).

> *Once I got to know how everything worked, and we have the meetings every Friday with the volunteers and [Glen] or [Shirley]. It was when I started putting my opinions forward then, for me, I think. Because up until then, everyone else is—I was just there…it was just good feeling like that you had a voice.*

The data show that for the (Community) Service Learning conception, "reading" and understanding others' experiences of digital technologies and the so-called digital divide, their digital literacy learning needs and barriers, and interpreting these into meaningful learning encounters are highly complex and significant socio-technical literacy practices.

> *So, you know, having the understanding that you can considerably help someone out, not only financially, but with morale and the rewarding side I suppose. It comes back to that little tiny thing, it's only a small thing, but it's such a big thing to them. So it's good to see it.*
>
> *Really, it depends on what is wrong with the computers, or who I am trying to teach. It comes down to their ability to learn really. I show them the way that I know and they might not be able to grasp that, so I would have to think of a different way to teach them. If I don't know one, it's going to take me a while to figure it out.*

As discussed in the section on leadership learning in GraniteNet, for those who step up, move out of their comfort zones and take personal risks to assume leadership roles in GraniteNet as a socio-technical learning environment and Community of Practice with a digital inclusion mission, learning involves both personal transformation and the "collaborative construction of ideas in practice" (Carroll, 2009, p. viii).

Learning more about how to help a "not for profit" organisation, such as GraniteNet, that's been a good learning curve for me. Learning that you have to think outside your normal little square. Luckily I've always been a person who is willing to step out of the square and learning that there are times that we really have to put our thinking caps on…

The major lift in self-confidence which I applied, when I was voted in as President. I recall that I was running around for about two weeks, saying "Oh my god, what will I do?" But in all honesty, it's drastically helped me to become who I am now and I'm very happy with that person. Get up and go – it's got to be done eventually.

7.4.4.3.   *Socio-technical practices at the community network level*

Moving up to the Community/Network level in Figure 7-3, participation in the hybrid socio-technical environment of the GraniteNet community web portal as reflected in the two conceptions in the Communities of Interest cluster involves socio-technical literacies for community networking, information-sharing and (blended) community learning[160]. In the Community Information Literacy/Social Inclusion conception in Category 3, for example, the GraniteNet community portal is seen as a lifeline for people who are marginalised to connect with their local community through access to, and sharing of, local community information. As community connections are made, links forged with local community services, community groups and associations, and digital Community Information Literacy skills developed for the purpose of sharing information via the GraniteNet community portal, opportunities are afforded for active participation in local community associational life in which physical and virtual interactions and activities become mutually reinforcing.

You might be Interested in gardening. You could find a gardening club. You can find interests that you are interested in and become part of the community. Without that portal, how will you find out about it? If you are like me, who is not a great mixer; I'm good at reception, because I can put on the face and say "Hello, how are you?" etc. I can do that, but If I wasn't working here, I'd be looking on the internet to find out what sort of things I am interested in and how I can get Involved in the community. Without a portal to do it with, it's impossible.

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[160]   For supporting evidence for this interpretation, refer to the descriptions of the Community Information Literacy and Blended Community Learning conceptions in Chapter 6.

If someone wants to contact us about becoming a member of our organisation, or helping the organisation in some way, saying "I've got these skills, can I help?" They have a way in actually contacting us… You need a portal where you can learn what the community is about; what things you can do for the community.

We need that accessibility especially if we are going to continue operating. It's almost like dragging it into the 21st Century.

I guess the idea of having screen shots – they work because you can see "in the flesh". "This is what it what it looks like when you have done this and then if you go over to this bit here…." Because sometimes, when you are talking about navigation, or tabs, people go, "What on earth are you talking about"? I might be calling it the wrong thing anyway and someone else may know it by something else. If you can see visually, this is what you do, that seems to be pretty good for letting people know.

Of particular interest to scholars in the emerging research area of Community Information Literacy (CIL) are the insights that these findings afford for understanding the diversity of experiences of information literacy skills and practices in community settings, and in particular, how they interface with digital and social literacies, affording more "socially grounded ways of understanding information" and information practices in community, civil society settings and increasing researchers' awareness of "the diversity of information users, and their learning and cultural experiences" (Bruce, Sommerville, Stoodley & Partridge 2013, pp. 236, 238). The conception of learning reflected in the Community Information Literacy/Social Inclusion conception in Category 3 sees Community Information Literacy as a virtuous cycle of generic, situated and transformative socio-technical literacy practices that serve to foster community connections, thereby reducing isolation and promoting social engagement and learning. These findings are consistent with research out of Europe and the US reporting positive outcomes of various forms of online interactions for place-based communities, including "how online and offline interaction form two parts of a whole support mechanism for community, whether the former occurs as a steady background complement to local life or whether it fills in when local life is disrupted" (Haythornthwaite & Kendall, 2010, p. 1090). These studies have also "repeatedly found that close, personal ties can and are maintained online and through new technologies…and that synergies between online and offline strengthen rather

than weaken relationships and community" (p. 1087), a finding that is well supported in this study.

In the 'Blended Community Learning conception (Category 4) GraniteNet is experienced primarily as a mechanism for supporting local community groups or Communities of Interest through provision of access to a free, self-administered webpage and dedicated email address for these groups on the GraniteNet community web portal and also to free Content Editor training and technical support. Responsibility is assumed for editing of the community group's webpage on the GraniteNet portal, a role that requires development and refinement of the Community Group Content Editor digital skills set, an extension of basic digital and Community Information Literacy (CIL) skills that are the focus of digital learning in Category 3. Conceptions of learning and digital technologies in the Blended Community Learning conception reflects an expanded awareness of the affordances of the GraniteNet community portal from the "Community Noticeboard" conception to seeing GraniteNet and other digital environments as spaces for interaction, engagement and learning in Communities of Interest that can enhance face-to-face communication and, as such, support "blended" community learning.

> *I'm involved with the local [Community Group H], but I'm also involved online. We have an email list and we are always talking about different things and asking each other questions if we get something on Health Line and we have no idea about. We are always asking each other and learning from those more experienced counsellors.*
>
> *This is about learning activities as opposed to information. The Community Noticeboard is great for information, but if you want to know what activities can I get involved in….*
>
> *Certainly, I do learn a lot. I am really interested in Permaculture and I am going to do a two-week course with a group in Mudgee. Doing a two-week, hands-on, in the field course, but they, every week, they post and it's on their website and their blog, so I get it by RSS, but they also post it to their Facebook page.*
>
> *There are certainly things that I want to translate from my online learning experiences to in person learning experiences.*

Thus, this study's findings contribute to our understanding of the information practices of an "informed citizenry" (Bruce, 2008b, p. 6) by illuminating the

"information practices that enable people to use information effectively" (Bruce, 2008b, p. 6) and to "learn with and from each other" (Bruce, 2008a, p.vi) in the context of community and associational life. Further, as part of the spectrum of community socio-technical literacy practices, these findings provide support for theorising about learning that emphasises positive correlations between people's social networks and relationships, their participation in civil society and associational life, their use of information for learning in socio-technical environments and their engagement in informal, community and network learning (Bruce, 2008a; De Laat & Schreurs, 2013; Field, 2005; Fischer, Rohde & Wulf, 2009; Kavanaugh et al., 2009). These dynamics are further elaborated in the discussion of distributed community leadership in Section 6.5.5.

7.4.4.4. *Socio-technical practices at the community development level*

In the top layer of the diagram are literacy practices for community technology capacity-building (reflected in the three conceptions in the Community Development cluster), including technology stewarding (Category 5), community technology capacity-building (Category 6) and a community learning as a "learning-based approach to community development" (Faris, 2005, p. 31) (Category 7). Learning content at the intersection of learning in the Community, Technology-Sociotechnical and Learning domains of learning in GraniteNet reflected in the three conceptions of learning from the "Developer Perspective" takes community information practices to the next level of community technology capacity-building, as a set of transformative and emancipatory socio-technical literacy practices. These practices require new kinds of literacies, including technology stewarding, as "a flexible understanding about how digital habitats can serve the learning of communities" (Wenger, 2009, p. 184), along with an ability to envision new opportunities and possibilities for the community web portal. It also requires a practical understanding of how technology can be used to support community development (Community Informatics), including learning about the affordances of digital technologies and the internet for supporting lifelong learning. Bruner's (2012) theory of informal learning as "generating and testing possibilities" or "cultivating the possible" (p. 29) is particularly pertinent to theorising about learning and socio-technical literacy practices at the community development level.

I mean where do we go from now? That's one thing to think of. Granite Net needs to expand and that's part of "My Learning Space". How do we encourage people to learn? How do we do it?

…Maybe there are other things in the community where more could be done to help other people develop things… There again, there is an area where technology may help them further, but I don't know—I really don't know. I am sure there are other things—what, I really don't know.

I think that's been very much a very active, quite small circle for some time and I think right now it's probably poised to lift its eyes a little bit further and see where we can go with it.

Learning in the Digital Stewardship/Enterprise Learning conception in Category 5 is situated in the socio-technical practices of digital stewardship (Wenger, 2009) of the GraniteNet community portal and is linked to enterprising activities and participation in Networks of Practice (NoPs)[161]. Wenger et al. (2009) describe technology stewarding as a "practice emerging from the convergence of technology and community" (p. 23) that requires a kind of "literacy" that enables them to "'read' situations and propose courses of action" (p. xviii). These literacies are detailed in the description of the conception of the learning content and process in the Digital Stewardship/Enterprise Learning conception in Chapter 6, situated in the role of the GraniteNet technology steward[162]. In this conception, the focus is more on how digital technologies work; on the technical features of the digital habitat (Wenger, 2009); and on one's own relationship with digital technologies and identity as a recognized technology expert.

For me, it's "If I can't find it—if I can't find the fix for it, then there is probably no fix for it…." I like to fix customers' problems. I'm good at fixing problems. I like to be able to fix them.

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161   Networks of Practice (NoPs) are differentiated from communities of practice (CoPs) in that they are seen as looser, more distributed networks where "members share a common practice but do not work together in an interdependent way to co-ordinate their work" and do not "have a responsibility…for the reproduction of their community [or] their practice" (Fischer et al. 2009, p. 79).

162   Refer to the description of the Digital Stewardship/Enterprise Learning conception in Chapter 6 for details of the content and process of learning in this conception as a set of socio-technical literacy practices.

The experience of learning in the Community Technology Capacity-building conception in Category 6 is situated in the practice of Community Informatics as using technology as a tool for whole-of-community development—conceptualised as "a way of strengthening the community"[163] and as a public good. The technology practices (Ala Mutka, 2011; Cushman & Klecun, 2006) reflected in this conception are community education and capacity-building practices. These include supporting residents of the local community (primarily senior citizens) to learn about and learn to use digital technologies and the internet; raising community awareness of the affordances of the internet and digital technologies for communication and information dissemination about what is going on in the local community via promotion of community groups on GraniteNet; and raising awareness of the wider world via the connection between the GraniteNet community portal and the world wide web, thereby affording both individual and collective empowerment as a form of community education. This can be described as a pragmatic conception of digital technologies and digital literacies that is focused on "the subordination of technology" …to meet real human needs and accommodate to users in their lived situations" in order to build "healthy, empowered, active communities" (Schuler & Day, 2004 as cited in Bishop et al., 2009, p. 4).

> *The thing with GraniteNet is—like everything else—people tend to get carried away…. "It's an entity on its own". In fact, like virtually anything else, it's a tool, that's all. "That's all" puts it down a little bit, but that's not quite what I meant. It's a tool and a tool is only as good as how you know how to use it. So, you go round in a circle a little bit, for information that empowers people to find information; helps people find information that helps them to share information. If you then go into the "Help" thing, obviously GraniteNet has been quite focused on helping Seniors, who, in many cases are a group that need help in this area, but by no means confined to Seniors. I still say it is a resource to help and it comes back to what we were saying about empowering people; explaining to people; helping people.*

Also situated in the practice of community development, but from a Lifelong Learning perspective, the Learning Community conception in Category 7 privileges lifelong learning as the overriding goal and principle (Faris, 2005) for community

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[163] Refer to the description of the Community Technology Capacity-building conception in Chapter 6.

development and civic engagement. Thus, the community technology practices are orientated towards literacies for learning with and through technology in the interests of fostering community engagement and lifelong learning, including learning about how technologies can be used to support lifelong learning and the development of digital literacies, learning about how others see and experience GraniteNet and digital technologies, and learning about GraniteNet as a Community Informatics project.[164] The focus in the Learning Community conception is on community members having both access to requisite technologies and the capabilities—including "generic" and digital literacies (Lupton & Bruce, 2010, p. 6) to make effective use[165] (Gurstein 2003) of these technologies for community engagement and lifelong learning. As such, rather than seeing information literacy as a process or set of skills or behaviours (Bruce et al., 2013, p. 225), or indeed, as appropriation of technology, the conception of literacy reflected in the Learning Community conception reflects an interpretation of literacy that focuses on people's experiences of information use for learning, aligning with Bruce's (2008a) relational theory of informed learning as "using information, creatively and reflectively, [specifically] in order to learn" (Bruce, 2008a, p. ii).

> *So, on the one hand there's our opportunity to contribute to digital literacy, but on the other, is just to use GraniteNet as a mechanism and vehicle for a raft of learning opportunities.*
>
> *So I think that there's that aspect of it, certainly in expanding your horizons because what it does, it takes you out of what you are familiar with and it shows you something that you won't necessarily see somewhere else. You can see just the amount of information is on there…I think it's a bit like going to the movies. It provides a perspective that you wouldn't otherwise get. I see it as a tool for the possibilities that computers can offer, for helping people to envision something different. That, I think, if you can allow people to expand their processes of thinking, then you've got the potential for change.*

Based on this study's findings, the spectrum of community socio-technical literacy practices illustrated in Figure 6.2 supports the basic premises of the GeST

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[164]   Refer to Table 5.10 for a list of technology-focused community development practices in the Learning Community conception.
[165]   Stillman and Denison (2014) describe Gurstein's (2003) concept of effective use as "a practical theory for achieving community empowerment" that is "intended to distinguish between the opportunities offered by ICTs and the[ir] actual realization in practice"(Stillman & Denison, 2014, p. 8).

Windows framework (Lupton, 2008; Lupton & Bruce, 2010) that both generic and situated literacies underpin transformative literacies, that literacy is "fundamentally a social act" that is "contextual, authentic, collaborative and participatory" (p. 5) and also potentially a transformative practice when it is concerned with empowerment of individuals and groups, raising awareness and effecting social change.

7.4.5. A model of socio-technical community leadership for the 21st century

The findings of the GraniteNet study provide support for, and add to, findings in the literature about the changing nature of community volunteering, and community leadership, in the digital era. The important role played by voluntary groups and associations in community information communication and dissemination is noted in the literature on learning in volunteer work associational life and Community Informatics (Kavanaugh et al., 2009;Putnam, 2000), with the "wide diffusion of the internet generally credited with…providing citizens with new possibilities" (Kavanaugh et al., 2009, p. 59). for sharing of information, political learning and participation In their longitudinal study of the Blacksburg Electronic Village in the USA, Kavanaugh et al. (2009) found that community volunteers who "affiliate with multiple groups…play an increasingly active role in communicating and disseminating information to other participants" (p. 71) and form "weak social ties" (or "bridges") between diverse groups (pp. 56, 71). They also found that these so-called "Bridges" (Kavanaugh et al., 2009, p. 68) had higher levels of electronic communication modes than other volunteers and that there was a positive correlation between these online interactions and participation in face-to-face interactions related to community volunteering. With reference to information practices that enable people to "learn with and from each other" in associational life (Bruce, 2008a, p. vi), the findings presented so far about the content of learning in the two conceptions in the Communities of Interest Cluster appear demonstrate a link between community-focused information practices and distributed community leadership that potentially contributes to understandings about the nature of leadership learning in Community Informatics[166].

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[166]   Refer to the descriptions of the content of learning in the two conceptions in the Communities of Interest Cluster in Chapter 6.

For example, the case study report in Chapter 5 shows that, of the almost 100 local community groups listed on the GraniteNet community portal at the time of the study, 13 of the 31 most active community groups and two of the four community blogs were represented in the study's sample of 20 GraniteNet community volunteers, with the case study findings showing 10 of these 20 respondents to be "classic community volunteers" (Schugurensky et al., 2010, p. 82) whose involvement in GraniteNet is linked to their membership of at least one other local community group or community of interest (CoI). Further, as shown in the analysis of the nature and extent of respondents' involvement as volunteers in Figure 5.13, of these 10 classic community volunteers who were performing GraniteNet Content Editor duties for their community groups on the GraniteNet portal, six were editing the pages for only one community group, with the other four volunteers editing web pages for between two and five community groups each. A closer look at the respondent sample also shows these respondents to be actively involved as community group Content Editors with 9 of the 13 most active community groups represented in the data, with 2 also active as community bloggers on GraniteNet[167]. Thus, these 4 Content Editors and community bloggers can be characterised as Bridges (Kavanaugh et al., 2009) who are actively involved in disseminating information electronically on behalf of multiple community groups, via the GraniteNet community portal[168].

Reviewing the locations of each of these four respondents in the case study schematic in Figure 6-33 along with their conceptions of learning in GraniteNet reflected in the colours attributed to each respondent in the map, one can see these four respondents' perspectives express a combination of conceptions that one would feasibly expect to see of Bridges as described by Kavanaugh et al. (2009)[169]. Further, the case study data reveal these four respondents to be performing multiple roles as GraniteNet volunteers that include holding community group and organisational leadership positions involving participation in face-to-face interactions in addition to

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[167]   The perspectives of these two community bloggers, who were also acting as Content Editors for two or more community groups on the GraniteNet portal, are reflected primarily in the Blended Community Learning conception of learning in GraniteNet, as described in Chapter 6.
[168]   The four respondents are respondent numbers P.2, 2.7, 2.11 and 2.16, as shown in Figure 5-8 and Figure 6-3.
[169]   That is, either the Community Information Literacy conception (Category 3) or the (Blended) Community Learning conception (Category 4) in combination with two of the following conceptions: the (Community) Service Learning (Altruistic) conception (Category 2), the Community Technology Capacity-building conception (Category 6) or the Learning Community conception (Category 7).

community group Content Editor responsibilities for two or more community groups, again reinforcing Kavanaugh et al.'s (2009) characterisation of the positive correlation between the online and offline community volunteering activities of Bridges. It is therefore possible to conclude that these four volunteers—both as community group leaders and as Bridges taking an increasingly active role in disseminating information electronically on behalf of multiple community groups—are performing community leadership roles that serve to promote community networking, build community technology capacity and facilitate community learning.

This role can be characterised as distributed community leadership. This is a different kind of leadership learning from that described in the earlier discussion of learning at the intersection of learning in the Personal/Relational and Organisation/Enterprise domains, which is focused on organisational leadership in the physical GraniteNet environment as a significant personal development learning and as a collective learning phenomenon. In contrast, the community leadership role described here—whilst still a function of local and community group affiliation, altruism and learning opportunism—is situated in the socio-technical practices of the GraniteNet community group Content Editor role as a community socio-technical leadership practice, blending "community leadership capacity" (Kirk &Shutte, 2004, p. 234) with "community network capacity" (Adams, 2005, p. 11). Along with the other conceptions of learning at the intersection of the Technology/Socio-technical, Community and Learning domains, the literacy of distributed community leadership embedded in the practices at the "Community Networking" level of the spectrum of community socio-technical literacy practices in Figure 7-2 illustrates the transformative potential of digital technologies at both individual and collective levels where digital literacy is conceptualised as the appropriation of ICTs for individual and social change and transformation, potentially providing ways forward for understanding and conceptualising "new literacies" that "go beyond lists of competencies…to capture…the nature of what is new" (Nelson et al., 2013, p. 216).

7.4.6. Learning about learning

As Duguid et al. (2013) acknowledge with reference to findings about different areas of community volunteers' learning, "the emphasis on certain themes depend[s] on the mission of the organisation" (p. 229) in which people are participating. As described in the case study report in Chapter 5, GraniteNet's heritage as a Learning Community and Community Informatics project aimed at supporting digital literacy learning at individual, organisational and community levels within a broader normative framework of promoting lifelong learning helps to account for learning outcomes in the domain of Learning being reflected in the conception of the learning content in six of the seven categories in the study's outcome space, as summarised in Table 7-1[170]. Despite acknowledgment in the literature reviewed for this study of the pervasiveness of informal learning in the contexts of organisations and workplaces, civil society, associational life, volunteer work, geographical and blended learning communities and Community Informatics, investigation into the precise nature of research respondents' learning about learning—as a specific content domain—is not strongly thematised in this literature. There are a number of possible explanations for the absence of such theorising about learning as a content domain.

For example, rather than being identified as specific, valued learning outcome in its own right, learning about learning and learning how to (informally) facilitate one's own and others' (informal) learning in the literature on learning in associational life and volunteer work is often conflated with learning in other content domains (such as communication and interpersonal skills, self-efficacy, advocacy, community support or social awareness, for example). Another reason may be that supporting and facilitating others' informal learning—and in particular, their digital literacy learning—is conflated by community volunteers with "helping people"—a phenomenon noted by Kilpatrick et al. (2010) in their study of rural community volunteering in Australia and by Duguid et al. (2013) in their case studies of learning in different types of volunteer organisations, and one that is also echoed in conceptions of learning in the GraniteNet study. This conundrum related to the recognition and

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[170]   In the interests of interpretive awareness, it is also acknowledged that this researcher's predilection for viewing phenomena through a learning lens (as articulated in Chapter 3) contributes to their attribution as learning content in the domain of Learning rather than other content categories such as leadership, advocacy or mentoring, for example.

valuing of supporting others' informal learning as "teaching" or "training"—referred to in the literature as "the invisible work of informal teaching" (Church, Frazee and Panitch, 2010)—is captured in the words of one of the GraniteNet study's respondents:

> *When you are a volunteer and when you are helping somebody, believe it or not, you are the teacher. Therefore you are teaching that person and that person is learning….*

With reference to learning about adult and community learning, Usher and Bryant (1989, p. 2) note that the field of adult education practice "embraces many different types of practitioner" on a continuum from the full-time, professional adult educator to individuals whose vocational and community activities have implications for adult learning. As shown in Table7-1, GraniteNet volunteers perform a range of activities that have significant implications for adult learning, from teaching older adults basic digital literacy skills in a face-to-face, informal learning environment to facilitating community and network learning via sharing of information and knowledge in blended online and face-to face learning communities.

7.4.6.1. *Processes and mechanisms of learning about learning as a content domain: Practical, experiential and relational learning*

Almost without exception, the data show the experience of the processes and mechanisms of learning about learning (as a content domain), to be highly practical (practice-based), relational and experiential, as illustrated in Table 7-3.

Table   7-3
Learning Content and Related Learning Processes in the Domain of Learning

Learning Content in the Domain of Learning	Related Learning Processes
Understanding and facilitating older adults' digital literacy learning (Cat 2)	Teaching or instructing ("helping", "showing", "working with") others, one-on-one and in small groups situated in the face-to-face environment of the GraniteNet community technology hub
Community Information Literacy (using, creating and presenting community information in ways that meet people's diverse information needs (Cats 3 and 4)	Using and editing community groups' web pages on the GraniteNet community web portal (includes the GraniteNet Content Editor Skills Set); may including Informed Learning
(Blended) Community Learning (learning about the affordances and limitations of digital technologies and the internet for learning in community with others) (Cat 4)	Participating in blended face-to-face and online Communities of Interest and community networking (including experimentation and reflection)
Understanding and responding to "low-tech" users' digital learning needs (Cat 5)	Performing the role of technology steward for the GraniteNet community portal
Community learning processes and methodologies (Participatory Action Learning/Action Research and Evaluation) Informal Learning, Lifelong Learning and Community Informatics (Cat 7)	Participating in the praxis of Community Development and Community Informatics (including "generating and testing possibilities" and critical reflection)
Learning about one's own learning (meta-learning- vocational and career development learning) (Cat 2B) Learning about one's own digital literacy learning (digital meta-learning) (various conceptions)	Focused thinking and reflection in- and –on action; cognitive monitoring; benchmarking and appraisal; integration of different knowledge discourses Reflecting on digital learning experiences

As such, learning about learning is not only a highly practical and relational phenomenon; it also requires exposure to variation, an understanding of how others see the world and phenomena in the world, and reflection on the experience of learning about learning. Implications of these findings for learning in Community Informatics are discussed in Chapter 8. The discussion now turns to a summative interpretation of what the findings of the GraniteNet study reveal about how the learning process is experienced, thereby completing the interpretation of the study's findings in response to the stated research questions.

7.5. What makes Learning in GraniteNet Possible? Experiences of Primary Learning Processes, Mechanisms and Incentives

7.5.1. Learning in GraniteNet as a function of social participation

As has been highlighted throughout the preceding discussion of the content and processes of learning, the study's findings show significant learning across seven broad content domains and, more importantly, at the intersections of particular content domains, to be first and foremost a function of social participation (Wenger, 2009) or interaction (Illeris, 2007) in the context of community-based, digital inclusion activities in GraniteNet's hybrid socio-technical environments[171]. These activities constitute social practices as described by Wenger (2009). For Wenger (2009) social participation refers to "processes of being active participants in the practices of social communities and constructing identities in relation to these communities" (p. 210). Wenger's conception of learning as social participation corresponds well with Illeris' (2007) conception of the "interaction dimension" (p. 96) of learning in his three-dimensional learning theory, which he describes as "situated learning" whereby "the learning situation not only influences, but is also a part of, the learning" (Illeris, 2007, pp. 96-7). For Illeris (2007) the "learning situation" includes both "the immediate situation" and the "broader societal situation" (p. 97) in which the learner finds him or herself, which corresponds with Wenger's (2009) social learning theory—a broad

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[171] Refer to summaries of learning processes and mechanisms in dimensions of variation and critical differences tables for the conception of learning in each category in the outcome space at Appendix U and Appendix HH.

conceptual framework of situated, social learning of which Communities of Practice are a "constituitive element" (Wenger, 2009, p. 212). Drawing on Habermas (1987), Jarvis (2009) refers to this emic[172] perspective of the social as "the lifeworld of the social group" (p.11).

Thus, based on the study's findings about the experience of learning from the learner's perspective (Marton & Booth, 1997) as reflected in the study's outcome space, learning in GraniteNet can be understood as a function of social participation in the sense of participation in both the more immediate social settings and their practices (for example, participation in the activities of GraniteNet's hybrid, socio-technical environments) and also in the broader societal context and its socio-cultural—including socio-technical—practices, of which the immediate situation is a part (such as the local, proximal community and also the broader network of social and societal life in the digital era)[173].

7.5.2. Multiple processes and mechanisms of learning under the umbrella of social participation

Against this backdrop of learning as social participation, the data reveal multiple processes and mechanisms of learning reflected in conceptions of the learning process across all categories in the study's outcome space. For the purposes of this analysis, a learning process is understood as an activity involving the learner's agency in *acquiring*, *knowing* and *making use of* the learning content (Marton & Booth, 1997) [emphasis added], although this may occur incidentally, "as a by-product of another activity involving intentional learning" (Mezirow, 2000, p. 5). In the case of GraniteNet, learning is undertaken in the context of social participation in the management, delivery and/or use of GraniteNet's community technology activities and services guided by a normative framework of digital inclusion, community

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[172]   Here, the term emic is used to refer to what Habermas calls "the perspective of acting subjects" (as cited in Jarvis, 2009, p. 11) in society.
[173]   This includes the conception of learning in the Frontier Learning conception, where learning is experienced as acquisition (rather than as participation), but is nonetheless motivated by (Illeris, 2007)—and draws its meaning from (Wenger, 2009)—social participation. This is because, unlike the conception of learning in all other categories, learning in the Frontier Learning conception is de-situated from the authentic contexts in which the learning is to be applied. Therefore, although motivated by social participation (as a desire to maintain social connections with significant others) the process of digital literacy learning in the Frontier Learning conception is experienced as acquisition and not participation.

engagement and lifelong learning. This learning occurs through the learner's participation in physical and virtual socio-technical environments and may be experienced as an individual or a collective phenomenon, but is always practical and predominantly relational in nature[174]. Learning processes include observation and imitation; practice (as repetition or overlearning); problem-solving, trial-and-error (or "trying out"[175] or experimentation); benchmarking; performing allocated or self-initiated tasks and fulfilling particular roles in the community of practice; learning through communication, co-operation, participation and exchange; learning through helping others to learn; learning through collaborative problem-solving, experimentation and inquiry, and through self-directed research, and reflection in and on action (Schon, 1991). Learning in GraniteNet also includes browsing for, sharing and evaluating information and learning through the construction of artefacts (reification) (Wenger et al., 2009) and through information and knowledge exchange, networking, connection, construction and bricolage. Table 7-4 summarises the main learning processes for each conception of learning in the study's outcome space.

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[174] Definitions of the terms 'practical' and 'relational' as they are used in this theorising are provided as part of the explanation of the typology of informal learning in GraniteNet presented in sub-heading 7.5.4.

[175] Eraut (2004) prefers the term "trying things out" which he distinguishes from trial and error by the learner's "intention to learn from the experience" (p. 187), which is more along the lines of Dewey's (1916) conception of experiential and experimental learning. Eraut (2011) also uses the term "deliberative learning" to describe this kind of learning. The term "trial and error" as it is used here reflects this intentionality.

Table 7-4
Experiences of the Process of Learning in each Category in the Outcome Space

Groupings	Conceptions of learning	Learning processes
Category 1: Frontier Learning conception*		Intentional practical learning as acquisition of basic digital literacies by observation, imitation, practice, exploration, problem-solving in a dedicated learning environment (also includes incidental learning)
Community of Practice Group	Category 2: (Community) Service Learning conception A. Altruistic B. Vocational* C. Leadership	A. Incidental and intentional practical learning through participation in the GraniteNet CoP including facilitating older adults' digital literacy learning (also includes socialisation) B. As above, plus mutual enhancement, benchmarking C. As above, plus collective learning – problem-based action learning, inquiry, experimentation
Communities of Interest Cluster	Category 3: Community Information Literacy/Social Inclusion conception	Intentional and incidental practical learning as acquisition of digital and information literacies situated in the socio-technical environment of the GraniteNet community portal
	Category 4: Blended Community Learning conception	Intentional and incidental practical learning as acquisition of digital literacies situated in the role of the GN Content Editor and participation in hybrid communities and networks of interest
Community Development Cluster	Category 5: Digital Stewardship/Enterprise Learning conception	Intentional and incidental practical learning situated in the role of GN technology steward involving problem-based, action learning, investigation, experimentation, bricolage, networking in the web environment
	Category 6: Community Technology Capacity-building conception	Incidental, practical, experiential learning situated in the practice of Community Informatics (living-as-learning; working-as-learning)
	Category 7: Learning Community Conception	Intentional and incidental practical learning situated in the practice/praxis of Community Development involving collaborative inquiry, action learning/research

A further analysis and synthesis of these learning processes as they are represented in conceptions of learning in the study's outcome space reveals seven primary learning processes in GraniteNet, including five individual learning processes and two collective learning processes, as shown in Table 7-5.

Table   7-5
Individual and Collective Learning Processes in GraniteNet

Individual Learning Processes	1 Practical learning learning-by-doing (intentional and incidental), as described above, and implicated in all other learning processes 2 Intentional self-directed, experiential learning through trial and error, experimentation deliberation, problem-solving and reflection in and on action 3 Learning through instructing, showing, helping, guiding and mentoring others (teaching digital literacy) 4 Learning through observing, seeking feedback, benchmarking, comparing, appraisal, meta-learning, evaluation 5 Seeking, using and sharing information for learning in socio-technical learning environments through exploration, navigation, discovery, problem-solving, experimentation, creation, construction, representation, reification, bricolage
Collective Learning Processes	1. Collaborative problem-solving, inquiry and action learning 2. Blended community and network learning (communication, sharing/exchange, , co-construction, cultivation, connection, networking)

7.5.3. What makes learning possible? Learning incentives and mechanisms

In answering the question about what makes learning possible in GraniteNet, consideration is given to both learning incentives and learning mechanisms. In his discussion of what he refers to as the "incentive dimension of learning", Illeris (2007, p. 26) notes that the experience of learning, including the content that is learned, is always "marked" by the nature of the learning incentive that has motivated the learner's engagement in learning. This includes the learner's attitude, motivation and volition (Illeris, 2007). As shown in the summary of learning processes, mechanisms and incentives atAppendix II, family, organisational and community affiliation (membership and belonging); altruism (helping others); and learning opportunism (seeking out and taking advantage of learning opportunities)

emerge in the data as significant learning motivators or incentives in the conceptions of learning in GraniteNet across the categories in the study's outcome space.

For example, as previously noted, family affiliation and connection constitute the driving force for digital literacy learning in the Frontier Learning conception. In addition to the need for social connection, participation and belonging that characterises conceptions of learning in the Frontier Learning, (Community) Service Learning- Altruistic emphasis and Community Information Literacy/Social Inclusion conceptions is a sense of altruism, which may well be associated with what McCluskey (1974, as cited in Findsen, 2006) refers to as the "contributive needs" of older people. Community and organisational affiliation, including a "commitment to the organisation's social and caring objectives"—as described by Elsdon (1995, as cited in Schugurensky & Mundel, 2005, p. 16)—are also strongly reflected as learning incentives in the Altruistic emphasis of the (Community) Service Learning conception. The data also show strong local community and group affiliation and learning opportunism to be primary incentives for learning in the two conceptions in the Communities of Interest Cluster.

With respect to the concept of learning opportunism presented here, Hager and Halliday (2006, p. 218) argue that informal learning is "opportunistic and contingent" in that 'associational' life continually "throws up" new opportunities for the "lifelong learner", who in turn can develop the wisdom to engage in and manage their learning "productively" by exercising their "growing capacity to make context-sensitive judgments" in situations where "appropriate actions are given authority by virtue of agreement among those the wider practice network". For the three conceptions in the Community Development Cluster, local community affiliation and a commitment to local community development goals and objectives are the driving forces for learning.

A learning mechanism refers to that which makes learning possible, such as exposure to variation (Marton & Booth, 1997). Social participation, however, is both a process and a mechanism of learning (Sfard, 1998). Subsumed under the umbrella of practical learning as social participation, the data reveal five primary mechanisms of learning: communication, interaction, connection, information and exposure to variation. Figure 7-4 presents in diagrammatic form the primary

learning incentives, processes and mechanisms reflected in the conceptions of learning in the study's outcome space, highlighting the centrality of social participation as the over-arching incentive for and mechanism of learning in GraniteNet, with its inherent processes of interaction, communication, connection, information, and as a result, exposure to variation.
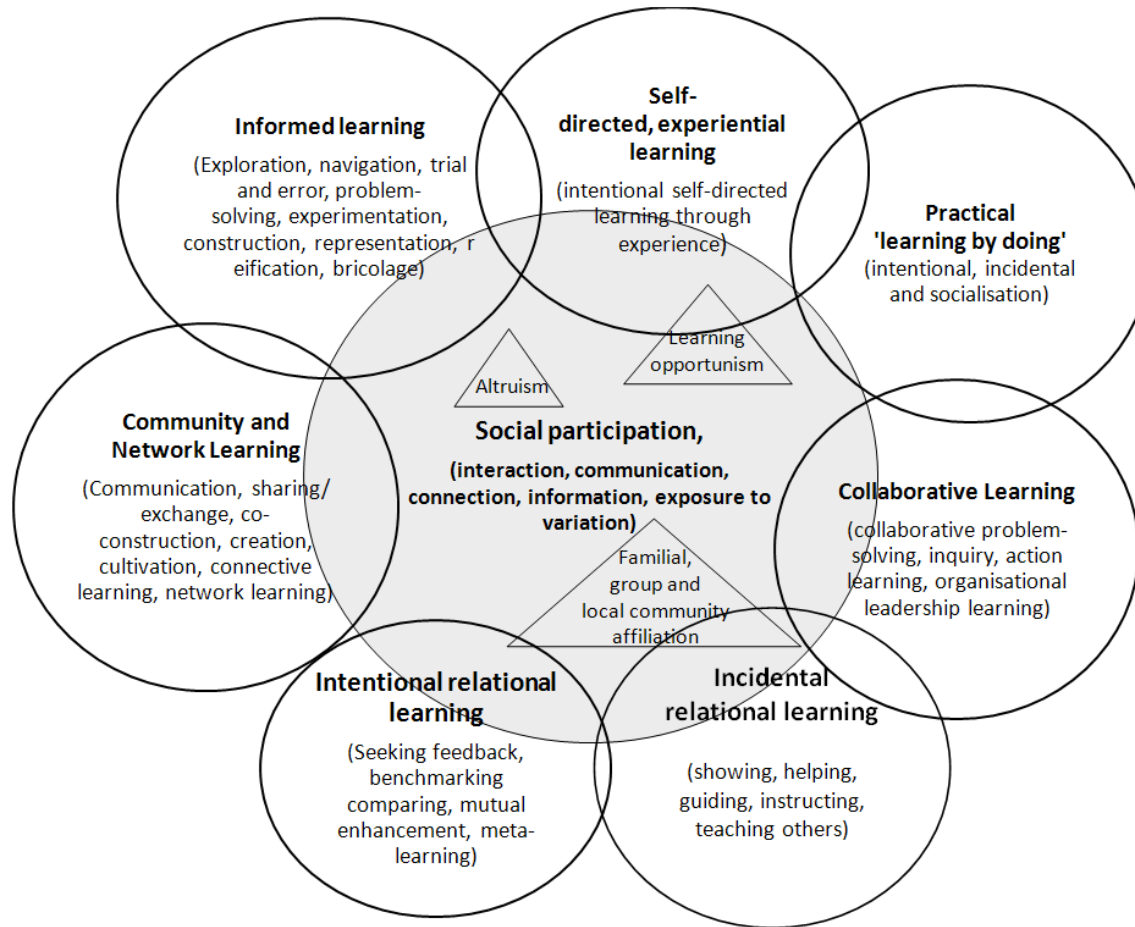
Figure 7-4   Learning processes mechanisms and incentives for learning in GraniteNet.

7.5.4. A typology of informal learning in GraniteNet

Drawing on the above analysis, Table 7-6 presents a typology of learning that theorises informal learning in GraniteNet with reference to seven distinct, yet related types of learning: Practical, Deliberative, Intentional Relational, Incidental Relational, Informed, Community and Collective learning. The positioning of these types of learning in the table is indicative of their inter-relationships, with individual forms of learning (Practical, Deliberative, Relational and Informed learning) located at the top and communal forms of learning (Community and Collective learning) at the base. Each type of learning is mapped to the category in which it is reflected in that category's conception of learning in the phenomenographic outcome space.

Table   7-6
A Typology of Informal Learning in GraniteNet

Practical learning

– 'learning by doing' – through participation in work practices of various kinds in both the physical and virtual socio-technical environments.

Includes intentional, incidental and assimilative learning or socialization)
(Categories 1, 2, 3, 4, 5, 6, 7)

Deliberative learning

Intentional self-directed learning through "testing and generating possibilities", deliberation and reflection in and on action in both physical and virtual socio-technical environments

Includes practical, relational and informed learning

(Categories 2, 3, 4, 5, 6, 7)

Relational learning

Learning primarily with and through interactions with others in the physical, socio-technical environment

Includes intentional, incidental and assimilative learning or socialisation

(Categories 1, 2)

Informed learning

Exploration, navigation, trial and error, problem-solving, experimentation, construction, representation, reification, bricolage in the physical and virtual socio-technical environments

(Categories 2, 3, 4, 5)

Intentional relational learning

Observation, comparing, seeking feedback, benchmarking, appraisal, evaluation (meta-learning) in a face-to-face socio-technical environment

(Categories 1, 2B: Vocational emphasis)

Incidental relational learning

Learning through showing, helping, guiding, mentoring and instructing (teaching others) in a face-to-face, socio-technical environment

(Categories 1, 2A: Altruistic emphasis)

Blended Community learning

Communication, sharing, networking, connecting, exchange, co-construction in blended physical and virtual environments

Includes Communal Informed Learning and distributed community leadership

(Categories 4 and 5)

Collective learning

Collaborative problem solving, inquiry, action learning, leadership learning (strong identification with the collective)

Includes relational and organizational leadership learning

(Category 2C: Leadership emphasis, Category 7)

Each type of learning in the typology is now briefly described with reference to theoretical perspectives from the literature and examples from the findings.

7.5.4.1.   *Practical learning*

Positioned at the top of the table is Practical learning, a learning process reflected in the conceptions of learning in all seven categories in the study's outcome space. Commonly referred to in the literature on learning in associational life and volunteer work as learning by doing (Duguid et al., 2013; Schugurensky et al., 2010), practical learning is understood here first and foremost as learning "that is about action in a pragmatic manner in order to achieve certain goals and behaviours" involving "primary rather than secondary experience" and "using practical knowledge" developed through this experience in the context of "practical living in the everyday" (Jarvis, 2009, p. 11). Included as practical learning are learning how to do something through the practice of the particular skill or activity in question (Heron, 2009) and learning about something (as acquisition of propositional knowledge and conceptual understanding as a by-product of, or alongside, practice).

In GraniteNet, practical learning includes situated, social learning through participation in practices of various kinds, including communication practices, organisational practices, community socio-technical literacy practices and technology practices for community development. For GraniteNet volunteers, practical learning involves learning through participation in work practices of various kinds in GraniteNet's physical and virtual socio-technical environments and may include what Mezirow (2009) refers to as instrumental, communicative and transformative learning. It includes intentional, self-directed and deliberative learning (where learning is the primary object of activity) (Eraut, 2004, 2011) and incidental learning (where learning is a by-product of other activity) (Eraut, 2004, 2011; Mezirow, 2009; Schugurensky, 2000). Practical learning is therefore considered to be the most pervasive type of learning in GraniteNet, encompassing all other forms of learning and, as such, is implicated in each of the other types of learning in the table.

7.5.4.2.   *Deliberative learning*

Deliberative learning is intentional or self-directed (Candy, 2004) practical learning through "testing and generating possibilities" (Bruner, 2012, p. 29) for action in GraniteNet's physical and virtual socio-technical environments. This kind of learning involves "using a prior interpretation to construe a new or revised interpretation of the meaning of one's experience as a guide to future action" (Mezirow,

2000, p. 5). The primary lenses through which this kind of learning is viewed are individual cognition, construction and reflection (Fenwick & Tennant, 2004). As is the case with Practical learning, self-directed, Deliberative learning is reflected in conceptions of learning in all seven categories in the study's outcome space. However, whereas practical learning may or may not involve high levels of intentionality and awareness on the part of the learner at the time of the learning process (Schugurensky, 2000) and may therefore involve both incidental learning and socialisation deliberative learning is highly intentional and involves deliberation as "explicit thinking" (Eraut, 2011, p. 183) and reflection in, and on, action (Schon, 1991). Examples of Deliberative learning in GraniteNet reflected in the data include vocational and career development learning in the Vocational emphasis of the (Community) Service Learning conception; action learning in the Leadership emphasis of the (Community) Service Learning conception; Community Information Literacy Learning in the Community Information Literacy/Social Inclusion conception; digital meta-learning in the Blended Community Learning conception; experimentation and problematisation in the Digital Stewardship/Enterprise learning conception; Community Informatics learning in the Community Technology Capacity-building conception; and participatory action research in the Learning Community conception.

7.5.4.3. *Intentional and incidental relational learning*

Relational learning, reflected predominantly in conceptions of learning in the Frontier Learning and (Community) Service Learning conceptions in Categories 1 and 2, is learning primarily with and through interactions with others and with things in the physical, socio-technical environment. As such, learning can be seen as "emerging in the relationships that develop among all people and everything in a particular situation" (Fenwick & Tennant, 2004, p. 56) and can therefore be viewed through both a socio-cultural and a social constructivist lens (Booth, 2008). Conceptions of learning in GraniteNet show Relational Learning to be divided into two distinct forms: Intentional Relational Learning and Incidental Relational Learning. Intentional relational learning is reflected in the conceptions of learning in the Frontier Learning conception in Category 1 and the Vocational emphasis of the (Community) Service Learning conception in Category 2B and is learning through observation, comparison, imitation, seeking feedback, benchmarking, appraisal and evaluation in the face-to-face socio-technical environment of the GraniteNet community technology hub.

Incidental relational learning is primarily reflected in the Altruistic emphasis of the (Community) Service Learning conception in Category 2. As its name implies, Incidental Relational learning is learning that is essentially unplanned and emergent, but is nonetheless highly significant and valuable learning that "furnish[es]…direct increments to the enriching of lives" (Dewey, 1916, Chapter 18: The Valuation of Studies, para 2)—specifically, to the lives of those volunteers for whom this conception is prominent. Incidental Relational Learning refers primarily to the significant learning afforded individuals by "helping" others (that is, facilitating older adults' digital literacy learning) in the face-to-face socio-technical environment of GraniteNet's community technology hub. What makes this learning possible is a degree of empathy with and caring about others and a disposition "orientated towards the common good" (Schugurensky et al., 2010, p.90), referred to in this study as altruism. Citing Jordan (1991), Beatty (2006) refers to this as "open learning reciprocity", which involves being "open to influence, to being emotionally moved, to being vulnerable" (p. 349). For these GraniteNet volunteers, learning is experienced as a strongly relational and reciprocal phenomenon ("a two-way street"), with teaching others digital literacy skills – experienced through an altruistic filter—highlighted as by far the richest, most enjoyable and most rewarding learning experience.

7.5.4.4. *Informed learning*

Drawing on Bruce's (2008) theorising about relational informed learning theory, Informed Learning in the GraniteNet typology refers to using information for learning in GraniteNet's virtual socio-technical environment of the community web portal. Informed learning in GraniteNet is reflected primarily in the conceptions of learning in Categories 3, 4 and 5—the conceptions situated in the practices of Community Information Literacy, Blended Community Learning and Digital Stewardship—and has been elaborated in the description of community socio-technical literacy practices at the levels of community networking and community technology capacity-building in sections 7.4.1 and 7.4.2. The concept of Informed Learning used here draws on theorising about Informed Learning from studies of information literacy (Bruce, 2008; Bruce et al., 2013) that "attends to variation in people's information experiences rather than their skills or attributes" (Bruce, Abdi, & Stoodley, 2013, p. 225) to describe "how people use information, creatively and reflectively, in order to learn" (Bruce, 2008b, p. ii). In Informed learning, "information is interpreted as that which is experienced as

informing (Bruce, 2008b; Lupton, 2008), and learning is interpreted as becoming aware of or experiencing aspects of the world differently (Marton & Booth, 1997)" (Bruce, Sommerville, Stoodley, & Partridge, 2013, p. 226).

The data show the experience of Informed Learning in GraniteNet to be both an individual and a "communal" phenomenon (Bruce et al., 2013, p. 229). Key processes of Informed Learning at the communal level reflected in the data include practical learning about one's own and other people's information needs and learning procedural and codified knowledge for creating, accessing, modifying and evaluating information, sharing community information with others (Community Information Literacy) and using this knowledge to connect with, network and become (more) involved in the local community and/or in the blended, or hybrid, Community of Interest. This involvement, in turn, affords practical, deliberative and experiential learning at the individual level about the affordances and limitations of digital technologies for supporting community learning through "generating and testing possibilities" for action (Bruner, 2012, p.29) and learning to manage one's own socio-technical literacy practices (digital meta-learning). Key mechanisms of Informed Learning in GraniteNet as community socio-technical literacy practices include exploration, navigation, trial and error (as "trying out") (Eraut, 2004) problem-solving, experimentation in both physical and virtual socio-technical environments, and – in the virtual environment of the GraniteNet community portal—construction, representation, reification, and bricolage.

7.5.4.5. *Blended community learning*

At the base of the table are the two forms of collective learning reflected in the data: Blended Community Learning and Collective Learning. Linked to Informed Learning at the community level described above, Blended Community Learning is learning through communication, information sharing, networking, connecting, exchanging, and co-construction of knowledge in blended physical and virtual socio-technical environments, and as such, is reflected in the conception of learning in the Blended Community Learning conception in Category 4 and the Digital Stewardship/Enterprise Learning conception in Category 5. What distinguishes this form of learning from other forms of community learning reported in the literature is its physical place-virtual space hybridity; that is, whilst the "abiding importance of

place to people and to the management of their lives and circumstances" (Duke, Osborne, & Wilson, 2005, p. 5) is recognised and valued, "an experience of place enabled by technology" (Wenger et al., 2009, p. 38) is simultaneously afforded, thus illustrating "how online and offline interaction form two parts of a whole support mechanism for community" (Haythornthwaite & Kendall, 2010, p. 1090). Blended Community Learning includes both intentional and incidental learning and is the domain of technology stewarding and distributed community leadership learning, as described in Section 7.4.3. The processes and mechanisms of Blended Community Learning include communication, sharing, networking, connection, exchange and co-construction in blended physical and virtual environments and as such, are distinguished from learning in the GraniteNet Community of Practice, on the one hand, and also from Collective Learning.

7.5.4.6.   *Collective learning*

Collective Learning, as collaborative problem-solving, inquiry and action learning, is the home of learning in the Leadership emphasis of the (Community) Service Learning conception in Category 2C and is also reflected in the Learning Community conception in Category 7. Collective learning includes organisational leadership learning and systematised collective learning such as Participatory Action Research and Evaluation (PAR&E) and Action Learning/Action Research (ALAR) that serve to "operationalise" the place-based Learning Community, thereby enabling achievement of its "core business" (Kilpatrick, Barrett, & Jones, 2003, p. 6). of knowledge-sharing through collaboration Collective learning is thus distinguished as both highly intentional, collaborative in nature and involving the full experiential learning cycle, whereby learning involves not only coming to see the world in a different way, but also in the process, coming to understand the different ways that other people see and experience the world and phenomena in the world (Marton & Booth, 1997). As such, it is a collective form of Deliberative learning.

7.6.   Conclusion

This chapter began with a discussion of what the phenomenographic findings tell us about what GraniteNet participants say they are learning as reflected in conceptions of the content of learning in the study's outcome space, with reference to learning across seven broad, interrelated content domains. Important links were made between the content of learning in these domains and the processes of acquiring it. Significant and valuable learning for GraniteNet volunteers at the intersections of particular content domains was highlighted, including personal development learning, organisational leadership learning, vocational and career development learning. In particular, the centrality of learning in the Technology/Socio-technical domain to learning in GraniteNet was highlighted, with reference to a spectrum of community socio-technical literacy practices that includes socio-technical learning at individual, organisational and community levels. Particular emphasis was placed on contributions to knowledge in the areas of Community Information Literacy, distributed community leadership and learning in the domain of Learning, both as a phenomenon and as a recognised field of study and practice.

GraniteNet participants' experiences of learning processes, mechanisms and incentives were then interpreted and synthesised to construct a typology of informal learning in GraniteNet theorising six types of practical learning under the umbrella of learning as social participation, including both individual and collective learning and learning that is intentional and incidental.

The discussion in the following, final chapter returns to the practice problems from whence this study's research questions emerged, and considers the implications of the findings for resolution of these practice problems and summarises the study's contributions to theoretical and methodological knowledge. Consideration is also given to the limitations of the study, with recommendations made for future research into informal learning.

Chapter 8.
Implications and Contributions to Knowledge: A Philosophical and Intellectual Engagement

It should not be an expectation that the empirical data generated in the study will, on their own merits, magically reveal the nature of learning; it is only through a philosophical and intellectual engagement with the data tempered with reflexivity that insights about the nature of learning will be generated (Hodkinson & McLeod, 2010). Phenomenographers must therefore also be philosophers.

8.1. Introduction

As outlined in Chapter 1, GraniteNet, as a local Learning Community and Community Informatics project, was identified by this researcher as potentially affording a rich case study of informal adult learning at the nexus of local community development and ubiquitous digital technologies in an Australian rural community setting. The Education practice problems on which the research questions were based were:

- How is lifelong learning fostered, promoted and facilitated in a small, rural Australian community through a Community Informatics project such as GraniteNet?
- How can Information Communications Technologies (ICTs) be used to support community learning (and, conversely, how can community learning support the development of digital literacy)[176]?

Adopting a sociological-philosophical position on "social theory and lifelong learning" (Williamson, 2006, p. 21) as a point of departure, this researcher

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176   It is now clear to this researcher—at the conclusion of the study—that in the formulation of these practice problems, the terms "lifelong learning" and "community learning" are used without a full awareness at the time of the implications of their important differences in meaning.

envisaged her project as being a serious inquiry into "how human beings [in this case, adults] actually come to learn what they claim to know and believe, and more importantly, how their knowledge changes as the circumstances of their lives alter" (Jarvis, 2009, p 7).

Having presented the findings in answer to the two research questions in Chapter 7, this chapter now presents the researcher's philosophical and intellectual engagement with these findings in a discussion of their implications and contributions to knowledge, both theoretical and methodological, with a view to resolving the original practice problems and addressing related knowledge gaps subsequently identified in the literature review. These knowledge gaps are summarised in terms of what the study's findings can tell us about:

1. The nature of the significant and valuable informal, everyday learning in which people engage in the context of participating in local rural community and associational life in a digital era.
2. The ways digital technologies interface with and impact on adults' informal learning in these community settings.
3. How research into informal learning in everyday life can best be conducted.

With reference to the first of these three knowledge gaps, it is argued that the findings make a contribution to knowledge about the experience of informal community learning from the learner's perspective, and specifically, learning embedded in social participation in rural community volunteering and associational life in the digital era. It is further argued that the findings contribute to understandings about the nature of learning in geographic learning communities, generating new insights about "how knowledge is shaped and shared in communities" (Bishop and Bruce, 2005, p. 6) and in particular, about the effects of socio-emotional and socio-technical factors in these interactions. As such, new insights are generated about the nature of informal adult learning that contribute to an "emerging view of learning" that enables us to "learn to think more creatively and productively about learning in all of its manifestations" (Hager, 2004, p. 15). Related to this are new understandings and insights generated about informal learning as a phenomenon linked to adults' growing capacity for metacognition and

reflexivity in the interests of understanding and furthering their own learning. The findings also contribute to knowledge about the changing roles of adult community educators and community leaders in the network society and digital era. Contributions to the phenomenography of informal learning are also made based on a comparison of the study's findings with those of selected phenomenographic studies that shed further light on theorising about the nature of informal learning.

With reference to the second of the above-listed points, contributions to knowledge in the emerging field of Community Informatics (CI) include insights generated about the socio-technical literacy practices required of an "informed citizenry" (Bruce, 2008b, p. 6) and specifically, illumination of the "practices that enable people to use information effectively" (Bruce, 2008b, p. 6) to participate as active, engaged and informed citizens in local community life. Contributions to knowledge are also proposed to help address the need for empirically-generated knowledge about how digital technologies can be used in the service of community (Bishop & Bruce, 2005) and particularly in relation to the "rapidly emerging CI application area of education, training and lifelong learning" (Gurstein, 2000, p. 15).

With reference to how inquiry into informal learning in community settings can best be conducted, specific contributions are made to knowledge in the form of particular phenomenographic techniques and instruments that can be used to good effect to investigate the submerged iceberg (Livingstone, 2001) of adult's informal learning in community and associational life and volunteer work, and potentially, in other settings including workplaces and formal education settings. Conclusions are drawn about the strengths and limitations of phenomenography for investigating informal, everyday learning in community settings.

Proposing the above contributions to knowledge necessarily forces an engagement with the question of the extent to which this study's findings are able to be generalised beyond the local context to other, comparable settings. Therefore, this question is addressed at the outset of the chapter, where it is argued that the reader's engagement with "warranted assertions" (Dewey, as cited in Biesta, 2009, p. 68) based on what has been learned about the phenomena in question through the conduct of a rigorous and reflexive instrumental case study affords "naturalistic

generalisation" (Stake, 2005, p. 425) of the findings, whereby readers will be the ultimate judge of the transferability of the findings to other, comparable contexts. The chapter concludes with this researcher's brief reflections on her own learning journey, highlighting her own significant and valuable learning about informal learning as an outcome of the study.

8.2.   Addressing the Question of Transferability of the Study's Findings to Other Settings

The first criterion for judging the quality of research is said to be the "advancement of knowledge" (Sin, 2010, p. 307), requiring the researcher to maximise the "communicative validity" (Akerlind, 2002, p. 13) of the findings to ensure the safe "transfer of knowledge from researcher to reader" (Stake, 2005, p. 455). Rogoff (2003, p. 29) adds that "The dilemma is that for research to be valuable, it needs both to reflect the phenomena from a perspective that makes sense locally and to go beyond simply presenting the details of a particular locale". This requires researchers to "ponder and probe the degree to which the findings have implications elsewhere" (Stake, 2005, p. 460), to consider "the meaning and comparability of situations and ideas across communities", and to "make some guesses as to what the patterns are" in order to go "beyond the particularities to make a more general statement about the phenomena" (Rogoff, 2003, pp. 12, 29, 32) in question. Therefore, highlighting implications of the findings both for the local setting and participants and for other comparable settings and participants is a requirement for the study to demonstrate advancement of knowledge.

Nonetheless, this researcher is also mindful of the highly contextualised nature of her phenomenographic findings, the bias inherent in her chosen methodology (in terms of how learning is conceptualised) (Hodkinson & McLeod, 2007) and that her own voice is unavoidably heard in the findings in addition to the voices of the respondents. Thus, transferability and generalisability of research findings are never able to be guaranteed in their presentation; instead, "the new understanding…forms the starting point of the next line of study, in a process of continual refinement and revision….That this process of learning never ends is not a reason to avoid it" (Rogoff, 2003, p. 31). The reader is therefore asked to consider

conclusions and implications that seek to go beyond the immediate research context in the spirit of the researcher sharing what she has learned—albeit provisionally (Rogoff, 2003)—as "warranted assertions" about the phenomenon of informal learning (Biesta, 2009, p. 68).

8.3. Contributions to Knowledge about Informal Learning in Community and Associational Life in a Digital Era based on Theorising about Informal Learning in GraniteNet

Findings about the significant and valuable informal, everyday learning in which people engage in the context of their participation in GraniteNet, presented in detail in the preceding chapters, form the basis for theorising about the nature of this learning that constitute the study's contributions to knowledge. This theorising is focussed on understanding and explaining community members' and volunteers' learning with reference to what they are learning—in terms of the various domains of learning content reflected in the findings; how they are learning it—that is, the different types of learning processes in which they engage; and, related to this, the core conditions and environments that afford and shape this learning. This includes whether learning is primarily intentional or incidental, whether learning is experienced as an individual or as a collective phenomenon, and theorising about the various mechanisms of learning, or what makes learning possible, including primary motivations and incentives for learning. These contributions to knowledge are now outlined.

8.3.1. Significant and valuable learning in the domains of Community, Technology and Learning

Beginning with what people are learning, the findings showed significant and valuable learning variously occurring for individuals and collectives across seven domains of learning content. The findings confirm the variety of learning opportunities afforded by small-scale voluntary and community-based organisations "across the spectrum of adult learning" (Kerka, 1998, p. 1) along with its breadth, depth and significance (Field, 2006; McGivney, 2006; Schugurensky, Duguid, & Mundel, 2010; Schugurensky & Mundel, 2005). Expanding on those reported in the literature on informal learning in associational life, volunteer work

and workplace learning, the findings further showed significant and valuable learning in the following three closely interrelated content domains to be reflected in all conceptions of learning in the outcome space, with the exception of the Frontier Learning conception[177]:

- Learning content in the Community domain, including local community knowledge and learning related to civic engagement, participatory democracy and community technology capacity-building.

- Technology/Socio-technical learning content, from basic and more advanced digital literacy skills needed for participation in associational life and community volunteering in a digital era, including Community Information Literacy and the GraniteNet Content Editor Skills Set, to the more advanced community socio-technical literacy practices of technology stewardship and distributed community leadership.

- Learning about learning, including learning about one's own learning linked to metacognitive and reflexive learning, learning about adults' digital literacy learning and learning about learning linked to practice the fields of Adult Community Education and Lifelong Learning.

Based on this finding about the pervasiveness of these three areas of learning content across all categories in the study's outcome space with the exception of the Frontier Learning conception, the conclusion can be drawn that GraniteNet volunteers at the time of the study were experiencing significant and valuable community learning that was not only serving an instrumental purpose in terms of being a means to a desired or valued end (Dewey, 1916)—such as the ends of social participation and digital inclusion through community volunteering—but also the kind of learning that "furnish[es]…direct increments to the enriching of lives" (Dewey, 1916, 2008, Chapter 18: Educational Values, 2. The Valuation of Studies, para 2) in the context of rural community and associational life in the

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177   As illustrated in Table   7-1, the experience of the content of learning reflected in the Frontier Learning conception included learning in the Technology/Socio-technical and Personal/Relational domains only. This is likely to be a reflection of the fact that learning in the Frontier Learning conception represents the Seniors kiosk Customer Perspective of learning in GraniteNet and as such, differs in many ways from the conceptions of learning in the other six categories that reflect Provider and Developer perspectives of GraniteNet's volunteers. This point is taken up later in the chapter, where the Frontier Learning conception of learning in GraniteNet is presented as a special case of non-formal learning.

digital era. Thus, the findings show how the significant educative effect of participation in associational life and volunteer work is magnified for the digital age by a learning-based approach to Community Informatics.

8.3.2. Theorising about informal learning processes in rural Community Informatics based on a typology of informal learning in GraniteNet

With respect to theorising about processes and mechanisms of informal learning, the study's findings showed significant and valuable learning for GraniteNet volunteers to be consistently:

- Motivated by a blend of altruism, interest-based learning opportunism, a need or desire for social participation, a strong affiliation with the local community and underpinned by a shared commitment to the community group's or organisation's mission (Elsdon, 1995).

- Afforded by opportunities to contribute to the work of the community group or organisation in the form of participation in the organisation's activities[178]. Ideally, this includes "an equal opportunity to participate in the various roles of discourse" (Mezirow, 2009, p. 91) which is afforded through the practices of participatory democracy in a supportive environment that enables "friendship, reciprocity and trust" to develop (Field, 2005, p. 140) and where there is an organisational commitment to supporting the learning of its members (Elsdon, 1995; (Wenger, White, & Smith, 2009).

Based on the conceptions of learning in the study's outcome space presented in Chapter 6, a typology of informal learning in GraniteNet was presented and justified in Chapter 7. A refined version of this typology .that

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178   Again, the exception is the Frontier Learning conception, which reflects the perspective of the Seniors kiosk customer and as such, not the perspective of one of GraniteNet's volunteers. Therefore, for the Frontier learning conception, learning is experienced as de-situated acquisition rather that situated in participation in the organisation's activities. Having said this, the respondent second order perspective for the Frontier Learning conception does reflect an imagined community volunteer role aligned with GraniteNet's digital inclusion mission.

theorises seven[179]   different types of informal learning under the umbrella of learning as social participation (Wenger, 2009) in rural Community Informatics is presented in Figure 8-1.
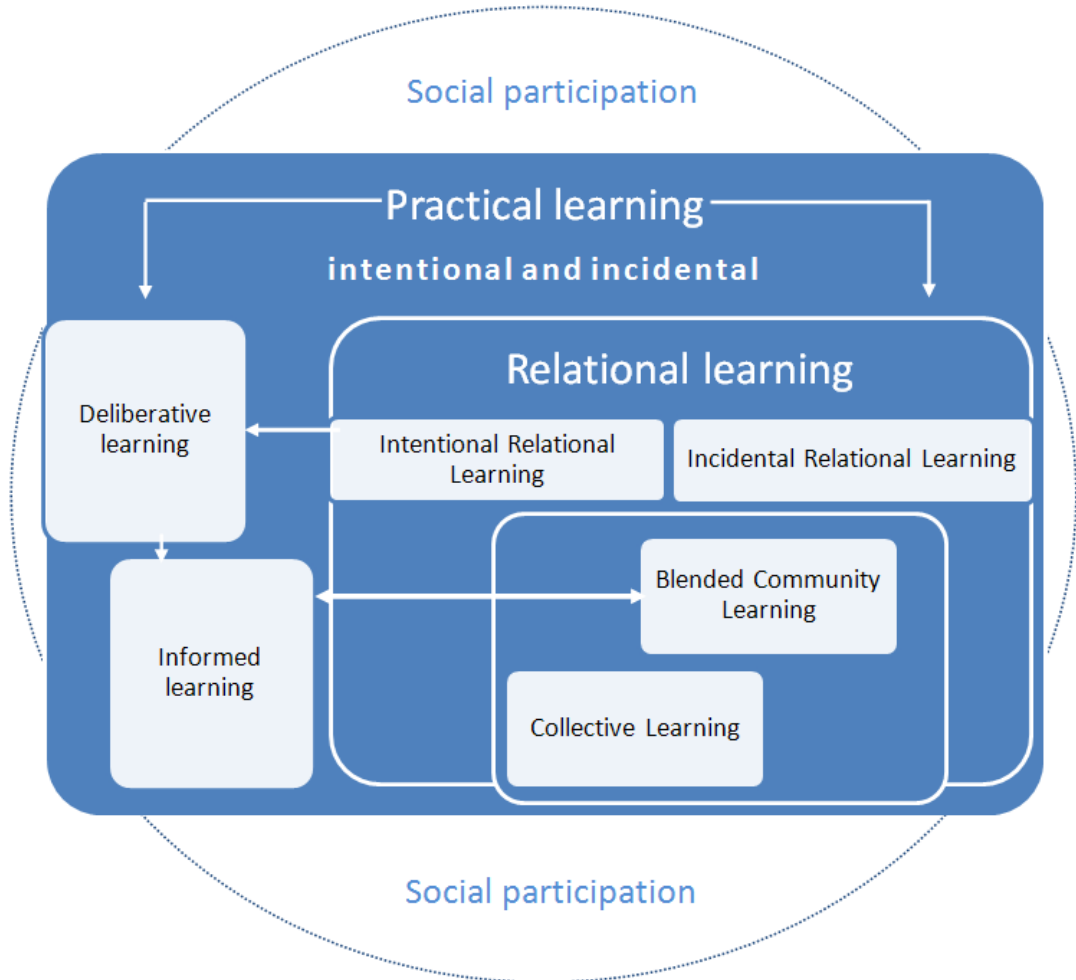
Figure 8-1   Towards a typology of informal learning in rural Community Informatics based on a typology of informal learning in GraniteNet.

As illustrated in Figure 8-1, the findings show learning in GraniteNet to be Practical[180] in nature, involving learning through participation in work practices of various kinds in GraniteNet's physical and virtual socio-technical environments. As illustrated in the diagram, Practical learning can be both intentional, where learning is the primary object of activity, or *noesis*, and incidental, occurring as a

179   As explained in Chapter 7, the fact that there are seven categories in the outcome space and seven types of informal learning in GraniteNet is coincidental; therefore, there is no one-to-one correlation between the categories in the outcome space and the and types of learning in the typology.

180   The precise nature of this practical learning is elaborated in the more detailed analysis in Chapter 7.

by-product of other activity (Eraut, 2004, 2011; Mezirow, 2009; Schugurensky, 2000).

Subsumed under the heading of Practical learning and located at the left side of the diagram are Deliberative learning and Informed Learning (Bruce, 2008a). As a particular kind of Practical learning, Deliberative Learning is intentional learning involving deliberation "explicit thinking" (Eraut, 2011, p. 183), problem-solving and experimentation in a Deweyan sense or "trying out" (Eraut, 2004, p. 187). A particular kind of Deliberative learning that specifically involves "using information, reflectively and creatively, in order to learn", is Informed Learning (Bruce, 2008a, p. ii). Informed Learning enables learners to "becom[e] aware of or experience[e] aspects of the world differently" (Bruce, Abdi, & Stoodley, 2013, p. 226). Informed learning in GraniteNet is primarily the domain of the conceptions of learning in the Communities of Interest cluster and therefore, situated in the practices of Community Information Literacy and Blended Community Learning.

Shown further towards the right in the diagram is the other primary type of Practical learning in GraniteNet—Relational learning. Relational Learning is learning "emerging in the relationships that develop among all people and everything in a particular situation" (Fenwick & Tennant 2004, p. 56) and can be either incidental or intentional. Intentional Relational Learning involves learning through conscious observation, comparison, imitation, benchmarking and questioning and as such, may also be Deliberative in nature—hence the arrow linking these two kinds of learning in the diagram. Intentional Relational learning is reflected in the Frontier Learning conception and the Vocational emphasis of the (Community) Service Learning conception, for both of which learning is the object of activity (*noesis*). Incidental Relational Learning, on the other hand, refers to significant and valuable unplanned learning that occurs as a by-product of performing other activities. In GraniteNet, learning by helping others in the form of teaching older community members digital literacy skills is the most prominent mechanism of Incidental Relational Learning and is reflected in the Altruistic emphasis of the (Community) Service Learning conception. The data show each of

these forms of learning to be experienced by learners individually, albeit in the context of social participation.

Located in the lower, right hand corner of the diagram are the two forms of collective learning reflected in the data: Blended Community Learning and Collective Learning. Blended Community Learning, as a "communal" form of Informed Learning (Bruce et al., 2013, p. 229), is situated in the activities of Community Group Content Editors and Community Bloggers in GraniteNet's hybrid socio-technical environment of the community web portal. Collective Learning, on the other hand, as a form of organizational and community leadership learning and a collective form of Deliberative learning, is situated in the GraniteNet community technology hub Community of Practice and is experienced as organisational leadership learning, as both an individual and a collective phenomenon.

Against the backdrop of this broad theoretical framework, the findings reveal the precise nature of learning in GraniteNet to be primarily dependant on:

1. The nature of the particular community organisational volunteering role that the individual is performing at the time, and related to this, whether they are experiencing learning in GraniteNet from the perspective of a Customer, Provider, shared Customer/Provider or Developer perspective.
2. Whether the individual's participation is situated in community volunteering activities occurring primarily in a face-to-face organisational setting, in a blended or hybrid face-to-face –virtual setting that "combines digital interactions with offline encounters" (Field, 2005, p. 140), or indeed, primarily in a web-based environment.
3. The individual's age, in terms of whether or not they could be classified as a younger community volunteer (Livingstone & Scholtz, 2010; Schugurensky et al., 2010) or as a "third age learner" (Hazzlewood, 2003, p. 1).

These dependencies are elaborated in the following sections, with important contributions to knowledge highlighted.

8.3.2.1.   *Theorising community volunteers' learning in a place-based community of practice with a digital inclusion mission*

The findings show that for those volunteers whose involvement is primarily in the context of their participation in the face-to-face activities of the community technology hub from the Provider perspective, significant personal development, organisational and community learning are situated in participation in the GraniteNet Community of Practice. At its best, the affordances of the GraniteNet Community of Practice for learning in community with others—and in the service of others—are realised through and leverage off the synergies generated by the alchemy of altruism, learning opportunism, a strong sense of (local) community, an interest in digital technologies, a sense of shared purpose, and reciprocal learning and collective action nurtured in the crucible of a positive learning and working environment. Under optimal conditions, learning whilst making a valued contribution to the community is the catalyst for personally significant and meaningful Intentional and Incidental Relational learning, which in this conception is mutual and reciprocal (a "two-way street").

For those who step up and assume leadership roles, Collective Deliberative learning involves personal and organisational transformation including the "collaborative construction of ideas in practice" (Carroll, 2009, p. viii) and social enterprising activity in the form of the development of community-owned socio-technical infrastructures. These can, in turn, have a capacity-building effect on the local community (Eversole, Barraket & Luke, 2013). With respect to the question of optimal conditions for such learning to occur, the findings confirm those from earlier studies that report a strong link between the quality and trajectory of individuals' learning and engagement and the well-being of the organisation (Elsdon, 1995; Duguid, Mundel, Schugurensky & Haggerty, 2013).[181]

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181   The reader is referred to the case study description in Chapter 5 which shows that this study was undertaken at a high point in GraniteNet's development in terms of levels of activity, participation and leadership across its hybrid learning and working environments. This helps to account for the study's overly and admittedly unashamedly "celebratory account" (Groundwater-Smith & Mockler, 2007, p. 205) of learning in GraniteNet.

8.3.2.2. *Conquering the technology frontier: Combining hard and soft scaffolding to facilitate older community members' digital literacy learning*

Habermas (1987) maintained that "in everyday communicative practice there are no completely unfamiliar situations. Every new situation appears in a lifeworld composed of a cultural stock of knowledge that is 'always already' familiar" (cited in Jarvis, 2009, p. 12). The Frontier Learning conception of learning in GraniteNet reflects the Seniors kiosk customer or "third age learner" perspective (Hazzlewood, 2003, p. 1) of learning in GraniteNet as conquering a technology frontier. This is an experience of learning about and learning to use digital technologies that involves a conscious decision to embark on the e-learning adventure and engage with community learning in spite of significant fears and misgivings about the "unknown void" of digital technologies and the internet (Richardson, Zorn, & Weaver, 2002, p. 11). There is, as such, a cultural discontinuity forcing Seniors kiosk customers as older "digital immigrants" (Prensky, 2001, p. 1) into an unknown cultural and learning frontier in which they can no longer take their world for granted. The learner is thus confronting a "disorienting dilemma" (Mezirow, 2009, p. 94) that forces a choice between transformational learning on the one hand and disengagement from learning, and potentially, social isolation on the other. The findings thus suggest that the certainties that characterised the social worlds and their constituent sub-cultures and lifeworlds of social theorists such as Habermas in a pre-digital and pre-internet society may no longer hold sway when it comes to theorising about social learning for older "digital immigrants" in a digital age.

However, the findings also show that, even in the very early stages of digital skills acquisition, so-called "third age learners" (Hazzlewood, 2003, p. 1) are able to understand how digital technologies can enhance the lives of others less fortunate than themselves with whom they feel an affinity or empathy, and that this altruism can be leveraged to afford an opportunity for meaning-full digital literacy learning in the context of volunteering in local Community Informatics. This finding also provides further support for theorising in the literature about older adults' "contributory needs" (McCluskey, 1974, as cited in Findsen, 2006) and how these can be simultaneously met and leveraged in the interests of digital and social

inclusion through supporting others' digital literacy learning, as illustrated in the (Community) Service Learning conception. In turn, this contribution to knowledge helps to "account for the personal more strongly in theories of learning" by adopting a "socio-personal conception of learning" to clarify the "significance of the relationship between the personal and social" (Billett, 2010, p. 231).

Also reflected in the Frontier Learning conception of learning in GraniteNet is a desire for structured learning about the scope of the field of digital technologies ("what's out there", "what it can do for me") in addition to access to learning resources that support self-directed learning. This could include provision of "hard scaffolding" (Candy, 2004, p. 269) in the form of learning resources that are:

- Organised, categorised and codified to clearly communicate what there is to learn ("the scope of what's out there").
- Sequenced in terms of identified threshold concepts and key skills that support the learner to negotiate "troublesome" knowledge (Kligyte, 2009, p. 541) and supplemented through the production of artefacts, or reification[182] (Wenger et al., 2009).
- Facilitated through exposure to a range of different learning opportunities and technologies that afford both Intentional and Incidental Relational learning through the learner's discernment of variation (Pang, 2003).

The findings about the experience of digital literacy learning from the learner's perspective therefore build on the theorising of Candy (2004), suggesting that older community members' digital literacy learning can be facilitated and enriched through a combination of hard and soft scaffolding in the forms described above.

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182   Wenger et al. (2009) explain that in the learning theory underlying the concept of communities of practice, "meaningful learning in a community requires both participation and reification to be present and in interplay" and that "interacting without producing artifacts makes learning depend on individual interpretation and memory and can limit its depth, extent and impact" (pp. 57-8).

8.3.2.3.   *Theorising about significant and valuable personal, vocational, career development and civic engagement learning for younger community volunteers*

The findings about the significant personal, vocational and career development learning experienced by younger community volunteers via their participation in the GraniteNet CoP suggest this to be a form of Intentional Relational learning involving processes of mutual enhancement (Eraut, 2004), metacognitive monitoring (Eraut, 2011) and reflective appraisal (McIlveen, et al., 2011) linked to participation in formal vocational education. Eraut (2004) refers to this as "integrative learning" whilst Illeris (2007) describes this kind of learning as "transversal learning" where "targeted learning efforts [that] aim at creating firm connections between the different learning spaces and sub-spaces" (pp. 230-1). Either way, the findings show this learning for younger GraniteNet volunteers to be motivated by an interest in digital technologies and a strong sense of learning opportunism enriched by a commitment to the host organisation's "learning and social or caring objectives" (Elsdon, 1995, p. 120). This theorising about the nature of younger volunteers' learning in the context of rural Community Informatics contributes to knowledge about the nature of this learning and exactly how targeted community volunteering and service learning opportunities linked to formal education afford significant and valuable personal, vocational, career development and civic engagement learning for younger volunteers. This provides confirmation of the unique learning affordances of third sector, "place-based" (Somerville & McIlwee, 2011, p. 326) communities of practice with a social mission and a whole-of-community development agenda for younger community members' lifelong and life-wide learning.

8.3.3. The significant educative effect of participation in associational life and volunteer work magnified for the digital age by a learning-based approach to Community Informatics

Arguably the most significant contribution from the GraniteNet study to new knowledge about informal learning in associational life in the digital era relates to theorising about learning in the context of GraniteNet as a learning-based approach to Community Informatics afforded by its duality as both a Learning

Community (LC) and a Community Informatics (CI) project. This includes contributions to knowledge about what kinds of knowledges, skills, literacies and capabilities are developed in LC-CI learning, what makes significant and valuable learning possible in LC-CI, and what constitutes effective use of digital technologies in the interests of individual and community development and empowerment in the context of the so-called digital and learning divides in today's network society. This theorising shows how the significant educative effect of learning in participatory democracy, associational life and volunteer work reported in the literature and confirmed by this study's findings is further expanded through the "combination of digital interactions with offline encounters" (Field, 2005, p. 148) afforded by GraniteNet's hybrid socio-technical working and learning environments. These contributions to knowledge are now highlighted.

8.3.3.1.   *New literacies for learning: A spectrum of community socio-technical literacy practices*

The findings show significant and valuable learning for volunteers in the areas of Community Information Literacy, Community Learning and Community Informatics as different forms of Intentional and Incidental Practical learning situated in the socio-technical literacy practices of the community group Content Editor and GraniteNet technology steward. This theorising about community-based socio-technical literacy practices—presented at the "Community Networking" and "Community Technology Capacity-building" levels of the "Spectrum of community socio-technical literacy practices" in Figure 7.3—helps to clarify the specific nature of the "information practices that enable people to use information effectively" (Bruce, 2008b, p. 6) to "learn with and from each other" (Bruce, 2008a, p.vi) in the context of rural community and associational life and also contributes to knowledge about the information practices of "an informed citizenry" (Bruce 2008b, p. 6) in the digital age. The findings also add weight to theorising in the literature that highlights positive correlations between people's social networks and relationships, their participation in civil society and associational life, their use of information for learning in socio-technical environments and their engagement in informal, community and network learning (Bruce, 2008a; De Laat & Schreurs, 2013; Field, 2005; Fischer, Rohde & Wulf, 2009; Kavanaugh, et al., 2009). Important contributions to knowledge in this area include theorising about new

roles that support community learning in the digital era and also about new literacies for a learning-based approach to Community Informatics.

8.3.3.2. *New roles that support community learning in the digital era*

The findings about conceptions and experiences of informal learning reflecting in the Communities of Interest (Categories 3 and 4) and Community Development (Categories 5, 6 and 7) clusters in the study's outcome space make a specific contribution to understanding the changing dynamics of community volunteering and associational life in a digital era. The findings point to the emergence of new roles that support community learning, including:

- Community volunteers who take on the role of Content Editor for their community group on the community portal.
- Those who play an increasingly active part in disseminating information electronically on behalf of multiple community groups— referred to in the literature as community "Bridges" (Kavanaugh et al., 2009).
- Those who actively participate in and facilitate Blended Community Learning as learning that leverages the "combination of digital interactions with offline encounters" (Field, 2005, p. 148);
- and those who go on to take up the role of "Technology Steward" and assume responsibility for guiding the community group's appropriation of technology to support achievement of its goals (Wenger, 2009).

The findings help to further clarify the nature of these roles based on empirical research and propose that these so-called community group Content Editors, Community Bridges, Blended Community/Network Learners and Technology Stewards are performing new community leadership roles in place-based communities and networks of interest and practice that can promote digital and social inclusion, facilitate community networking, build community technology capacity and generate community learning.

8.3.3.3. *New literacies for a learning-based approach to Community Informatics*

In addition to theorising about the particular nature of these emerging roles in terms of specific socio-technical practices and skills sets, the study's findings confirm the reported requirement for new kinds of socio-technical literacies for community development as community technology capacity-building – or Community Informatics. This includes an ability to steward a place-based community's "digital habitat" with "a flexible understanding about how digital habitats can serve the learning of communities" (Wenger, 2009 p. 184) and a practical understanding of how technology can be leveraged to support rural community development. The findings further support the assertion that significant learning about adult learning, community learning and lifelong learning can be afforded by adopting a learning-based approach to community technology capacity-building that includes learning about the affordances of digital technologies and the internet for supporting lifelong learning; learning that social change is possible (Rogers & Haggerty, 2013); and learning to collaborate with others to generate and test these possibilities for change (Bruner, 2012). Together, these constitute the complex understandings that underpin these socio-technical literacies and technology practices to promote community learning. Finally, these findings validate a key conclusion from the literature review conducted for this study that understanding learning in associational life—identified as the common learning denominator—is prerequisite to and essential for understanding learning in geographic Learning Communities and Community Informatics.

8.4.   Contributions to Knowledge in the Field of Phenomenographic Inquiry into Learning

In this section, the study's phenomenographic findings about conceptions and experiences of informal learning in GraniteNet are compared with conceptions of learning identified in selected phenomenographic studies to identify possible contributions to knowledge in the field of phenomenographic inquiry into informal learning. The first comparison is with findings of the earliest phenomenographic studies undertaken by the Goteborg Group (Giorgi, 1986; Marton, Beatty & Dall'Alba, 1993; Saljo, 1982, as cited in Gibbs, Morgan & Taylor, 1980; Marton & Booth, 1997) that investigated people's conceptions of learning in the context of

formal education. Based on studies with groups of open university students, Marton and his colleagues (Marton, Beatty & Dall'Alba, 1993) identified six different conceptions—or ways of seeing and experiencing—learning among a group of Open University students, the first five of which corresponded with conceptions of learning identified earlier by Saljo (1997) and later verified by Giorgi (1986, as cited in Marton & Booth, 1997): "learning as increasing one's knowledge, learning as memorizing and reproducing, learning as applying what has been grasped, learning as understanding, learning as seeing something in a different way and learning as changing as a person" (Marton & Booth, 1997, p. 36-38).

Importantly, the first three of these conceptions were seen to reflect an understanding of learning as primarily about "reproducing", whereas the last three were seen to reflect an understanding of learning as primarily about "seeking meaning" (Marton & Booth, 1997, p. 38), which the researchers then correlated with surface and deep approaches to learning respectively, whereby the former are focused on the learning "tasks themselves" and the latter "going beyond the tasks to what the tasks signify" (Marton & Booth, 1997, p. 38). The researchers considered that the conception of learning as changing as a person to be "the most extensive way of understanding learning in that it embraces the learner, not only as the agent of knowledge acquisition, retention and application, and not merely as the beneficiary of learning, but also as the ultimate recipient of the effects of learning" (Marton & Booth, 1997, p. 38). As the most-reported and authoritative work on conceptions of learning from phenomenographic studies, this cumulative dataset was chosen to provide a contrasting perspective to conceptions of informal learning in GraniteNet. Insights generated by this comparison provide support for Candy's assertion about the "enduring relevance" (p. 225) of the Goteburg Group's conceptions of learning to contemporary studies of everyday learning.

The second comparison is with a more recent study conducted by Boulton-Lewis, Marton, Lewis and Wilss (2000) as a collaboration between researchers from two Queensland-based universities and Gothenburg University in Sweden that investigated a group of Aboriginal and Torres Strait Islander university

students' experiences of both formal and informal learning[183]. This study was chosen for the purposes of comparison due to its explicit focus on identifying respondents' experiences of informal learning and also because it has been conducted in collaboration with researchers from the original Goteburg group. Therefore, the findings presented in a form conducive to comparisons with conceptions of learning in both the earlier Goteburg Group studies (as cited in Gibbs et al., 1980) and the GraniteNet study, which has been heavily influenced by this work[184]. Boulton-Lewis et al. (2000) distinguish formal learning from informal learning by describing formal learning as "occurring in contexts other than where the knowledge is used, as involving teachers, and as based around pedagogical goals", whereas "informal learning is influenced by culture and incorporates skills and knowledge that are learnt throughout life" (p. 473). Experiences of informal learning identified were: learning as acquiring skills by observation and imitation; acquiring cultural and social knowledge by learning from respected persons; independently developing practical skills by active problem-solving; and independently learning in areas of interest by finding appropriate resources (Boulton-Lewis et al., 2000, p. 478). Informal learning strategies used by respondents included observing, imitating, practising a skill, listening and questioning, talking to people, trial and error, experiencing life/specific activities, participating in an activity and researching in areas of interest (Boulton-Lewis et al., 2000, p. 480)[185]. The findings of all three studies are presented for the purposes of comparison and contrast in *Table 8-1*.

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[183] The fact that the respondents in this study were Aboriginal and Torres Strait Islander university students is not considered to preclude comparison with the data generated from the GraniteNet study, which sampled a diverse group of younger and older rural community volunteers, including two respondents who identified as being of Aboriginal and Torres Strait Islander descent (see the summary of respondents' demographic characteristics in Figure 5-8 and Appendix I). Boulton-Lewis et al. (2000) also noted in their findings that many of the conceptions held by ATSI respondents were similar to those reported for other university students in other countries (p. 485).

[184] In particular, the work of Marton (1988, 1994) and Marton and Booth (1997) has been most influential.

[185] It is important to note that the focus of the Boulton-Lewis et al (2000) study was on investigating Aboriginal and Torres Strait Islander University students' conceptions of both formal and informal learning, and considering implications of the findings for enhancing ATSI students' learning in formal education settings. Therefore, the study was not wholly focused on investigating conceptions of informal learning and therefore makes the recommendation that further research on students' conceptions of informal learning should be conducted.

Table   8-1

Comparing and Contrasting Conceptions and Experiences of Formal and Informal Learning in Selected Swedish and Australian Phenomenographic Studies

Conceptions of learning in formal education (Goteburg Group[2])		ATSI students' experiences of informal learning (Boulton-Lewis et al, 2000)	Conceptions of informal learning in GraniteNet	
Increasing knowledge	Primarily reproducing	Acquiring skills by observation and imitation	*Frontier Learning* as acquisition of basic digital literacy by memorising, observation, imitation and practice	Seniors' Kiosk Customer Perspective
Memorizing and reproducing				
Applying what has been grasped	Primarily seeking meaning	Acquiring cultural and social knowledge by learning from respected persons	*(Community) Service Learning* as participation in the GraniteNet CoP by contributing, relating, helping others, teaching, building capability, leading)	Community of Practice Group (Provider Perspective)
Understanding				
Seeing something in a different way		Independently developing practical skills by active problem-solving	*Community Information Literacy/Social Inclusion*- learning as becoming informed, making connections, and by using, creating, and sharing information with others	Communities of Interest Cluster (dual Customer/Provider Perspective
Changing as a person				
		Independently learning in areas of interest by finding appropriate resources	*Blended Community Learning* as interacting, networking, connecting, knowledge exchange, co-construction	
			Digital Stewardship/Enterprise Learning as technology stewarding (envisioning, designing, experimenting, constructing, networking, problem-solving, bricolage, enterprising)	Community Development Cluster (Developer Perspective)
			Community Technology Capacity-building as individual and community empowerment	
			Learning Community conception as lifelong learning, collective learning and community development)	

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[2] Giorgi, (1986); Marton, Beaty & Dall'Alba (1993); Saljo, (1982)

As indicated by the arrows in the table in the list of conceptions of learning in the left hand column of the table, the six conceptions of learning constituting the outcome space from the Goteburg studies are presented as a hierarchy of more or less desirable conceptions of learning in the context of generalised, formal education settings. In the outcome space from the Boulton-Lewis et al. (2000) study in the centre column, a hierarchy of conceptions of informal learning from "observation and imitation" to independent problem-solving and research is implied, but not explicitly stated, in the context of generalised, informal learning. The outcome space in the GraniteNet study in the right hand column, in contrast, is highly contextualised in the activities of GraniteNet as a rural Learning Community and Community Informatics project, with conceptions of informal learning in this context presented from three broad perspectives—Seniors kiosk Customer, Provider and Developer—corresponding with the particular relationship to this context expressed by the respondents. Although not, strictly speaking, hierarchical in nature, the GraniteNet outcome space does reflect an expanding awareness of the affordances of digital technologies for community learning and capacity-building.

A closer comparison of conceptions of learning across the three outcome spaces reveals some notable correspondences between conceptions of learning in the Goteburg Group studies and conceptions of learning in GraniteNet, and between experiences of informal learning from Boulton-Lewis et al. (2000) and conceptions of learning in GraniteNet. These similarities and differences, and their implications for theorising about informal learning in phenomenography, are now discussed, beginning with similarities and differences between conceptions of learning in the Goteburg studies and conceptions of learning in GraniteNet.

8.4.1. Similarities and differences between conceptions of learning in the Goteburg studies and conceptions of learning in GraniteNet

Firstly, as illustrated in Table 8-2, there is a notable correspondence between the lower order conceptions in the Goteburg Group studies that reflect a conception of learning that is "primarily about reproducing" (that is, "increasing knowledge", "memorising and reproducing" and "applying what has been grasped") (Marton & Booth, 1997, p. 38) with the conception of learning in the Frontier Learning conception in the GraniteNet study. This is explained by the strong focus in the Frontier Learning conception on learning as acquisition of (ideally codified[186]) propositional and procedural knowledge through memorising, reproducing and applying what has been grasped in order to reproduce those skills in a different, practice setting. The findings also show the Frontier Learning conception to reflect a strong intentionality, where learning is the direct object of activity (*noesis*) and where the object of learning (*noema*) is learning about and learning to use computers, albeit for a variety of purposes related to social participation. These particular aspects of the Frontier Learning conception of learning are strongly reflective of instrumental conceptions of learning in formal education, as identified in the Goteburg studies, where knowledge is seen as being external to, and to be acquired by, by, the individual learner (Saljo, 1979 as cited in Gibbs et al., 1980, p. 134). This correspondence is illustrated in Table 8-2 by the arrow connecting the lower order conceptions in the Goteburg Group's outcome space in the left column as "Primarily reproducing" with the Frontier Learning conception in the GraniteNet outcome space.

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186   Reflected in the Frontier Learning conception is a strong preference for codified knowledge, as illustrated in the description of this conception in Chapter 5 and summarized in the table at Appendix II.

Table 8-2

Correspondences between conceptions of learning in the Goteburg studies and conceptions of learning in GraniteNet

Conceptions of learning in formal education (Goteburg Group[3])		Conceptions of informal learning in GraniteNet	
Increasing knowledge	Primarily reproducing	*Frontier Learning* as acquisition of basic digital literacy by observation, imitation and practice	Seniors' Kiosk Customer Perspective
Memorizing and reproducing			
Applying what has been grasped		*(Community) Service Learning* as participation in the GraniteNet CoP (contributing, relating, teaching, building capability, leading)	Community of Practice Group (Provider Perspective)
Understanding	Primarily seeking meaning		
Seeing something in a different way		*Community Information Literacy/Social Inclusion* as becoming informed, making connections, creating and sharing information	Communities of Interest Cluster (dual Customer/Provider Perspective)
Changing as a person			
		Blended Community Learning as interacting, networking, connecting, knowledge exchange, co-construction	
		Digital Stewardship/Enterprise Learning as envisioning, designing, experimenting, constructing, networking, problem-solving, bricolage, enterprising	Community Development Cluster (Developer Perspective)
		Community Technology Capacity-building as individual and community empowerment	
		Learning Community conception (Lifelong learning and community development)	

Linking arrows in Table 8-2 also illustrate notable correspondences between the higher order conceptions in the Goteborg Group studies—described as being primarily about "seeking meaning" (that is, "understanding", "seeing something in a different way" and "changing as a person")—and conceptions of

learning across all categories in the GraniteNet outcome space. Insights generated from this analysis are now discussed.

8.4.1.1. *Learning as "understanding"*

According to the Goteburg Group's findings, understanding involves "an active effort on the part of the learner to abstract meaning from a discourse and also to relate this meaning to an outside reality" in order to "help you interpret the reality in which you live" (Saljo, 1979 as cited in Gibbs et al., 1980, p. 133-4). From the perspective of conceptions of learning in formal education, "outside" is the operative word, referring to the real world outside of the perceived artificial formal education setting. In contrast, the findings of the GraniteNet study show that, with the exception of the Frontier Learning conception, learning is experienced as being situated in the real world practices of respondents' participation in GraniteNet's diverse activities. Thus, whilst there is learning as understanding reflected in conceptions of learning in GraniteNet that is indeed "primarily about seeking meaning" (Marton & Booth, 1997, p. 36) as reflected in the Goteburg Group studies, learning as understanding in GraniteNet is situated in practice, and refers to the learner's interpretation of internal and external realities—that is, self and the world—and the relationships between these two realities, to generate insights to guide informed action in situ. The exception is the Frontier Learning conception of learning in GraniteNet, in which the conception of learning as understanding has more in common with that expressed in the Goteburg studies, as explained in subsequent sections of this discussion.

An analysis of "learning as understanding" as it is reflected in each of the conceptions of learning in GraniteNet is presented at Appendix JJ. Of particular interest to this analysis is the correspondence between the conception of learning as understanding in the Goteburg studies as "an active effort on the part of the learner to abstract meaning from a discourse" and relate it to "an outside reality" (Saljo, 1979 as cited in Gibbs et al., 1980, p. 133-4) and the conception of learning as understanding reflected in the Vocational emphasis of the (Community) Service Learning conception atAppendix JJ. For example, the Vocational emphasis reflects an active effort on the part of the learner to abstract meaning from two different discourses – the discourses of GraniteNet as a "friendly workplace" on the one

hand, and on the other hand, the discourse of formal vocational education—and relate these to the "outside reality" of the world of work. Also noteworthy is the Frontier Learning conception of learning as understanding, where there is an ongoing search for meaning that will enable "interpretation of the reality in which you live", which for the Frontier Learning conception, is the reality of living in the digital age. These comparisons indicate that the Goteburg Group's definition of understanding, as articulated by Saljo (1979, as cited in Gibbs et al., 1980), is a definition more applicable to an experience of learning in a dedicated learning environment that is de-situated from the authentic practice setting. However, the analysis at Appendix JJ also reveals that being able to interpret different discourses and relate them to one another and to one's own learning is central to learning as understanding in conceptions of learning in GraniteNet.

8.4.1.2. *Learning as "seeing something in a different way"*

The conception of learning as "seeing something in a different way" (Marton & Booth, 1997, p. 36) at the higher end of the Goteburg Group's hierarchy of conceptions of formal learning in Table   8-2 corresponds with the respondent second order perspective discovered in conceptions of learning in each category in the GraniteNet study's outcome space that reflects an expanded awareness of how others see and experience the world and phenomena in the world, and includes learning by experiencing or discerning variation Table   8-3   lists   the respondent second order perspective for each conception of learning in GraniteNet's outcome space as corresponding with "seeing something in a different way" from the outcome space in the Goteburg Group studies.

Table 8-3

Respondent Expanded Second order Perspective in Conceptions of Learning in GraniteNet as "seeing something in a different way"

Conceptions of learning in GraniteNet	Respondent expanded second order perspective as "seeing something in a different way"
Frontier Learning Conception	An expanding awareness of the affordances of digital technologies for enhancing the quality of life of frail aged community members
(Community) Service Learning Conception Altruistic emphasis Vocational emphasis Leadership emphasis	Understanding others' experiences of the digital divide and barriers to digital literacy learning Increased insight into one's own level of knowledge and skills (capability) in relation to 'signposts' Increased awareness of how GraniteNet is perceived by 'outsiders' in the community
Community Information Literacy/Social Inclusion Conception	Expanding awareness of the information needs and experiences of others
Blended Community Learning Conception	Expanding awareness of the world and of how others see and experience the world Increasing insight to one's own digital literacy learning
Digital Stewardship/Enterprise Learning Conception	Understanding how "low-tech" people experience using and learning to use the GraniteNet community portal
Community Technology Capacity-building Conception	Understanding how older community members experience digital technologies and the digital divide
Learning Community Conception	Understanding how others in the community view GraniteNet and digital technologies, what they want to learn, and how they want to learn

In the Frontier Learning conception, the largely frustrated quest for understanding of the digital world is partly resolved through the altruistic impulse to help others less fortunate that draws on a growing understanding of the

affordances of digital technologies and the internet for improving the quality of life of frail aged community members. This is theorised as the respondent expanded second order perspective, and shows how "coming to see something in a different way" affords meaning, and thus, understanding. As such, understanding underpins meaningful learning and informed action in all conceptions of learning in GraniteNet, as shown in Table 8-3, confirming a correspondence between "learning as understanding" in the Goteburg Group studies and conceptions of learning in GraniteNet as indicated by the arrows linking these in Table 8-2.

8.4.1.3. *Learning as "changing as a person"*

Also illustrated by the linking arrows in Table 8-2 is the correspondence between the highest level conception of learning in the Goteburg Group outcome space—"changing as a person"—and the conception of learning in the (Community) Service Learning conception in the GraniteNet outcome space. The description of the conception of learning in the (Community) Service learning conception showed significant personal development learning—including leadership learning—to be afforded through participation in the GraniteNet Community Technology hub community of practice. Learning that involves "changing as a person" comes about as a direct result of the learner's meaningful engagement in other activity, most notably facilitating others' digital literacy learning and leading the community organisation. The implication is that the highest form of learning in the Goteburg Group's outcome space is clearly afforded through incidental, relational learning in a community of practice. Overall, this comparison provides support for the assertion that significant and valuable learning—characterised in the Goteburg Group studies as being learning that is primarily about seeking meaning and involving personal transformation—is more likely to be afforded by an engagement in informal and incidental learning situated in, and motivated by, social participation in collective, collaborative activity in communities and networks of interest and practice than via intentional learning of specific content in a de-situated, formal education setting.

8.4.2. Similarities and differences between the experiences of informal learning in the Boulton-Lewis et al. (2000) study and conceptions of learning in GraniteNet

A strong correspondence can also be seen between conceptions of learning in GraniteNet and conceptions of informal learning in the Boulton-Lewis et al. (2000) study. As indicated by the arrows linking these conceptions in Table 8.4, "acquiring skills by observation and imitation", "acquiring cultural and social knowledge by learning from respected persons", "independently developing practical skills by active problem-solving" and "independently learning in areas of interest by finding appropriate resources"—all described in experiences of informal learning in the Boulton-Lewis et al. (2000) study—correspond with conceptions of learning in the Frontier Learning, (Community) Service Learning, Community Information Literacy/Social Inclusion and Digital Stewardship/Enterprise Learning conceptions of learning in GraniteNet. Importantly, the term "independently" is used by Boulton-Lewis et al. (2000, p. 478) to denote learning that is self- rather than other-directed and not learning that occurs independently of others. Moreover, the informal learning strategies identified by Boulton-Lewis et al. (2000)—"observing, imitating, practising a skill, listening and questioning, talking to people, trial and error, experiencing life/specific activities, participating in an activity and researching in areas of interest" (p. 280)—correspond with informal learning processes identified in the GraniteNet study.

Table 8-4
Correspondences between ATSI Students' Experiences of Informal Learning and Conceptions of Learning in GraniteNet

Conceptions of learning in formal education (Goteburg Group[2])		ATSI students' experiences of informal learning (Boulton-Lewis et al, 2000)	Conceptions of informal learning in GraniteNet	
Increasing knowledge	Primarily reproducing	Acquiring skills by observation and imitation	*Frontier Learning* as acquisition of basic digital literacy by memorising, observation, imitation and practice	Seniors' Kiosk Customer Perspective
Memorizing and reproducing				
Applying what has been grasped		Acquiring cultural and social knowledge by learning from respected persons	*(Community) Service Learning* as participation in the GraniteNet CoP (contributing, relating, helping others in need, teaching, building capability, leading)	Community of Practice Group (Provider Perspective)
Understanding	Primarily seeking meaning			
Seeing something in a different way		Independently developing practical skills by active problem-solving	*Community Information Literacy/Social Inclusion* as becoming informed, making connections, creating and sharing information for social inclusion	Communities of Interest Cluster (dual Customer/Provider Perspective)
Changing as a person				
		Independently learning in areas of interest by finding appropriate resources	*Blended Community Learning* as interacting, networking, connecting, exchanging and co-constructing knowledge in blended online and off-line communities of interest	
			Digital Stewardship/Enterprise Learning as technology stewarding (envisioning, designing, experimenting, constructing, networking, problem-solving, bricolage) and enterprising	Community Development Cluster (Developer Perspective)
			Community Technology Capacity-building as individual and community empowerment	
			Learning Community conception as lifelong learning, collective learning and community development	

However, there are substantial differences between the experiences of informal learning reported in the Boulton-Lewis et al. (2000) and GraniteNet studies' outcome spaces. The understanding of informal learning reflected in conceptions of learning in GraniteNet is one that is enriched by its situatedness in the practices of community and associational life and volunteer work, incentivised and motivated by a strong affiliation with GraniteNet's digital and social inclusion mission and local community learning

and development agenda, and transformed through a blurring of boundaries between the physical and the virtual, and between the individual and the collective. This enriched and expanded understanding of informal learning in GraniteNet is reflected in conceptions of learning in each category in the study's outcome space, with learning variously experienced as contributing, relating, leading, teaching, interacting, collaborating, networking, sharing knowledge, (re)presentation, (co-) creation, experimentation, envisioning, construction, bricolage, enterprising, empowering, transforming and collective generation and testing of possibilities for change. This suggests that studies such as the one conducted by Boulton-Lewis et al. (2000) that use the context of formal education and students conceptions' of formal learning as points of reference and departure for analysis of experiences of informal learning may be less likely to arrive at an outcome space reflecting the full richness and expanse of conceptions of informal learning than research focused wholly on inquiry into respondents' conceptions and experiences of informal learning in a community setting—research that the authors recommend at the conclusion of their paper. Finally, as suggested by Boulton-Lewis et al. (2000), it is potentially feasible and desirable for insights about the nature of the informal learning in which people engage in their everyday lives to be used to inform the development of "models of education that take into account a more comprehensive view of student learning" (p. 485). This challenge is taken up later in the chapter.

8.4.3. The conception of learning in the Frontier Learning conception as a conception of non-formal learning?

A final insight generated via the comparison of conceptions of learning in the three studies is the possible existence of a conception of non-formal learning reflected in the Frontier Learning conception of learning in GraniteNet. Unlike all other conceptions of learning in the GraniteNet outcome space, in the Frontier learning conception GraniteNet is experienced as a "technology school" (a place "where you can go to get your learning"), with learning digital literacy experienced as acquisition of knowledge and skills in a single content domain (digital literacies). Further, learning in the Frontier Learning conception is de-situated from the real-life contexts in which the knowledge and skills are to be used, and is also primarily dependent on instruction and direction from "teachers" or experts, albeit on an

individual 'one-on-one' basis in a "relaxed" and "friendly" informal learning environment. Thus, the similarities between the lower order conceptions of learning in formal education in the outcome space from the Goteburg Group study, which reflect a strongly cognitivist orientation to learning as acquisition of knowledge external to the individual, with the conception of learning in the Frontier Learning conception is highlighted. There are nonetheless important differences between the conceptions learning in formal education in the Goteburg group's outcome space and the Frontier Learning conception of learning in GraniteNet that clearly distinguish the Frontier Learning conception as a conception of informal, rather than formal learning.

Firstly, learning in the Frontier Learning conception is not "based around pedagogical goals" (Boulton-Lewis et al., 2000, p. 473) but around the learner's personal goals of being able to communicate with significant others and participate in local community life in a digital era, reflecting the fundamental mechanism of learning in conceptions of learning in the GraniteNet study as social participation. Secondly, the nature of the learning content in the Frontier Learning conception— as basic digital literacy—is highly practical compared with the more academic or theoretical conception of the learning content in the Goteburg studies. As such, this conception of the learning content aligns with the more practical focus reflected in the ATSI students' experiences of informal learning reported in the Boulton-Lewis et al. (2000) study, as shown in the middle column in Table 8.4. Thirdly, the experience of learning the Frontier Learning conception involves more than what occurs through episodes of direct instruction, incorporating the influence of cultural factors inherent in legitimate peripheral participation (Lave & Wenger, 1991) in the activities of the GraniteNet community technology hub. This also corresponds with aspects of the experience of informal learning in the Boulton-Lewis et al. (2000) study; that is, that is, "acquiring skills by observation and imitation" and "learning social and cultural knowledge from respected others" (p. 437).

Therefore, the Frontier Learning conception equally reflects characteristics of conceptions of both formal and informal learning, suggesting that it is a special case and, as such, may represent a conception of non-formal learning. Such a

characterisation of the Frontier Learning conception as a case of non-formal learning support's Jarvis' (2009) characterisation of non-formal learning as being "intentional supported workplace and community-based learning" and "unintended, incidental learning in workplace and community settings" (p.52) and also potentially provides support for the tri-part categorisation of formal, non-formal and informal learning most notably reported in the Colley, Hodkinson and Malcolm (2003) extensive literature review.

8.5. Implications for Policy and Practice: A Learning-based Approach to Community Informatics to Tackle the Digital and Learning Divides

The above contributions to knowledge provide adult community educators, Adult Education researchers, Community Development and Community Informatics practitioners working in comparable settings with knowledge that will potentially enable them to make more informed decisions about how to make effective use of digital technologies for community learning and development. Some important implications of the findings for policy and practice in these areas relate to the question of how the highlighted benefits of a learning-based approach to Community Informatics (LC-CI) for rural communities in the form of the individual and community capacity-building can be realised for individuals and communities in other rural and regional areas in Australia in the context of challenges presented by the effects of global change, as described in Chapter 1. As discussed in detail in Chapter 5, in spite of a policy commitment at the national level to an investment in national broadband internet infrastructure across Australia, the problem of an enduring digital divide exists, linked to a related learning divide. It is indeed the case that "privileged social groups enjoy a seamless integration of different types of learning that is denied to the disadvantaged (Colley et al., 2003 p. 109). These so-called 'disadvantaged' are those who are marginalized due to unemployment, geographic isolation, poverty, and cultural difference and include indigenous Australians, older, "third age" (Laslett, 1991) learners for whom "learning plays a key role in successful ageing" (Findsen, 2006, p. 69); adults with disabilities; adults from culturally and linguistically diverse backgrounds including migrants, refugees and seasonal workers; younger adults or

"youth learners" (Choy & Delahaye, 2003, p. 1) facing significant life transitions; and people living in regional, rural and remote communities.

The findings of the GraniteNet study show that local Community Informatics projects that are underpinned by a "learning-based approach to community development" (Faris, 2005, p. 31) have the potential to address this problem of equity of opportunity for such disadvantaged and marginalized groups in the community. Field (2005) maintains that the policy goals of adult learning and community building are closely linked, suggesting that that promotion of adult learning should include promotion of participation in community and associational life and active involvement in leisure activities. To this recommendation can be added the promotion and support of grass-roots learning-focused Community Informatics initiatives such as GraniteNet in partnership with universities, government, other education sectors, third sector organisations and business and industry, that are tailored to suit the particular needs, circumstances and social capital characteristics of particular communities and regions. Resourced well, and operating from a position of "Education for All" (UNESCO, 2013) such initiatives have significant potential to improve wellbeing and prosperity in rural and regional communities. Fortunati (2009) describes empowerment in the context of Community Informatics as being comprised of the following elements:

> Acquiring the ability to make choices; getting access to information for marking the right decisions; having a range of alternatives from which to make choices; acquiring the ability to define one's goals and act upon them; enabling positive thinking to create the ability to sort out right and wrong and to make change; acquiring the resources for improving one's personal or group power (Fortunati, 2009, p. 9).

As such, digital information communications technologies are seen as technologies that are capable of giving power to people (Fortunati, 2009), not only in the humanistic conception described above by Fortunati (2009), but also in the highly political sense described by Castells (2010), whereby "power relations…are increasingly shaped and decided in the communication field" (p. 239). Candy (2004) makes the point that the specific features and affordances "of the [digital

information communications] technologies themselves are rather less influential than [the capabilities and] intentions of the users themselves" when it comes to supporting what he refers to as "deep" and "transformational" (p. 238) learning. This point has significant implications for supporting development of digital literacy skills in combination with lifelong learning dispositions and capabilities for fostering what Gurstein (2003) has referred to as effective use of digital technologies. In this sense, the term 'effective use' is being appropriated for the purposes of a furthering a lifelong learning agenda, conceptualized from a social justice perspective, and incorporating life-wide and life-deep learning (Osborne & Maclachlan, 2009) for the development of "civic intelligence" (Schuler, cited in Day, 2010, p. 261). As such, "the idea of the social includes seeing information literacy both as a social practice and as a way of transforming society" (Lupton and Bruce, 2010, p. 8).

Figure 8-2 presents a tentative broad conceptual and philosophical framework for a learning-based approach to Community Informatics based on a practical theory of effective use of digital technologies for individual and community learning and empowerment (Gurstein, 2001; Stillman & Denison, 2014) informed by the GraniteNet case study. The framework draws on UNESCO's (2013) four pillars of education, Illich's (1971) learning interventions, a conception of learning informed by phenomenography (Marton, 1988; Marton & Booth, 1997) and conceptions of informal learning in GraniteNet to articulate a normative framework of broad educational aims and specific learning outcomes linked to individual and community technology capacity-building, which lies at the centre of the framework.
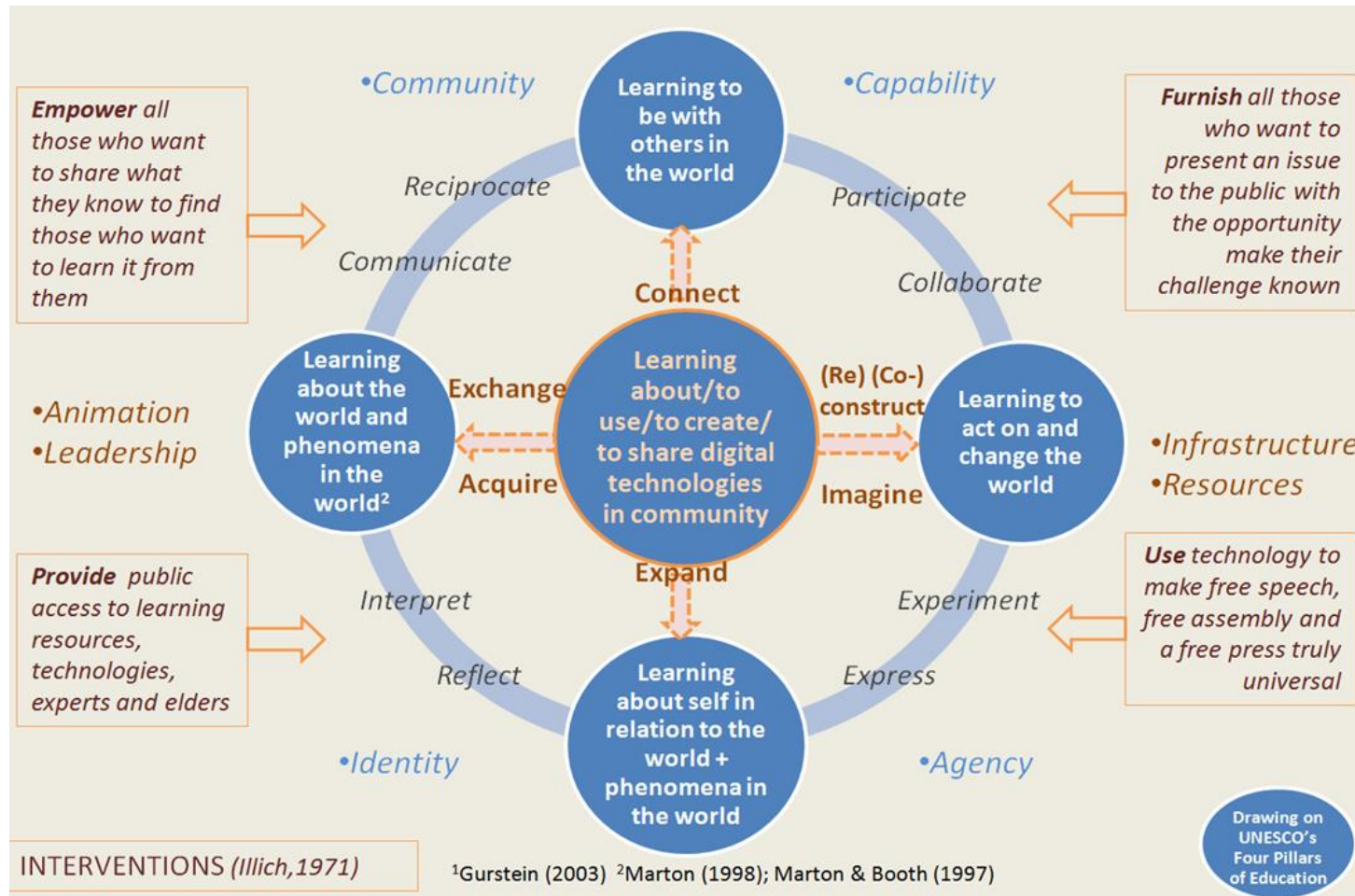
Figure 8-2   Towards a model of a learning-based approach to Community Informatics for individual and community learning, wellbeing and empowerment.

Radiating out from this central technology-focused objective at the centre of the diagram are four global learning goals related to learning in the domains of Community, Capability, Identity and Agency: Learning about the world and phenomena in the world; Learning to be with others in the world; Learning to act on and change the world; and Learning about self in relation to the world. Linking the central technology-focused objective to each of these global learning goals are arrows representing socio-technical learning processes required to achieve each goal. For example, Learning to be with others in the world is about making connections or "Connecting"; Learning about the world and phenomena in the world is about "Acquiring" and "Exchanging" information and knowledge; Learning about oneself in relation to the world and phenomena in the world is about "Expanding" one's horizons; and Learning to act on and change the world is about "Imagining", "Reconstructing" and "Co-constructing".

Learning in each quadrant of the diagram—in the space between each of the global learning goals—is focused on one of the aforementioned four learning domains of Community, Capability, Identity and Agency and involves specific learning processes relevant to that learning Domain and also to its relevant socio-technical learning process. For example, learning in the Community domain—in addition to "Connecting" and "Exchanging" as socio-technical learning processes—involves Communication and Reciprocity. Learning in the domain of Capability requires Participation and Collaboration in addition to "Connecting" and "Reconstruction/Co-Construction"; learning in the Agency domain involves Expression and Experimentation in addition to "Imagination" and "Expansion"; and learning in the domain of Identity requires Interpretation and Reflection in addition to "Expansion" and "Acquisition".

External inputs required to support implementation and sustainability include Animation, Leadership, Infrastructure and Resources. Finally, Illich's (1971) learning interventions complete the framework, articulating a philosophy of education orientated towards supporting learning outside of formal education institutions by providing free and full access to learning technologies, resources, facilities, subject matter experts, elders and opportunities for full and free participation in social and political discourse. As such, the model constitutes a framework for Adult Community

Education and Lifelong Learning for a digital era that operationalises a set of "social and political conditions of democratic dialogue" and "active citizenship" that helps adults to "think in critical ways, build on what they know, and through co-operative work with others, generate new knowledge and understanding" and, ultimately, "participate in shaping all of the decisions which affect their lives" (Williamson, 2006, pp. 202-205).

8.5.1. Implications for educators' roles and purposes

With reference to the question of educators' roles and purposes (Merriam, Caffarella, & Baumgartner, 2007) in the context of this framework, adult educators and adult education researchers are presumably concerned with the job of "empowering all those who want to share what they know" (Illich, 1971, p.44) with others to do so in a way that is most likely to achieve the desired results. Whilst this framework is built on the premise that learners themselves will become experts in understanding and facilitating their own learning—as a part of "learning about oneself in relation to the world and phenomena in the world"—and will also develop their capacities to support others' learning through the practice of doing so (Usher & Bryant, 1989), they will need to be supported by educators as learning experts who are able to provide access to both the "general, principled" (Wheelahan, 2009, p. 202) theoretical knowledge about learning as a content domain required for vocational learning and opportunities for reframing (Williamson, 2006) of their practical knowledge through processes of dialogue, reflection, "deliberation and interpretation" involving "hermeneutic understanding" (Usher & Bryant, 1989, pp. 74-75).

Based on conceptions of learning in the GraniteNet outcome space and, in particular, on conceptions and experiences of learning about Learning as a content domain, Table 8-5 presents a framework for learning about informal adult learning in Community Informatics that could potentially be used as a starting point for the development of Adult Education curriculum derived from one adult community educator's "practice problems" (Usher, 1987, p. 86).

Table 8-5

A framework for learning about informal adult learning in Community Informatics based on conceptions of learning about learning in GraniteNet

Learning about learning in GraniteNet	Practice	Reframing		
		Exposure to variation	Learning the 'respondent second order perspective'	Reflection on experience
Meta-learning (various conceptions of learning in GraniteNet)	Participating in a Community of Practice Learning about and learning to use digital technologies to participate in life in a digital age Participating in formal education	Benchmarking (comparing with others and to codified vocational competencies) Integration of learning in different settings Experience with a range of digital technologies and practices over time and in different situations	Developing a meta-perspective of personal learning and performance/capability in relation to vocational and career-related goals Developing a meta-perspective of digital literacy capability	Reflecting on personal knowledge and skills (capabilities) in light of personal and career-related goals Reflecting on digital literacy learning experiences (Informed Learning)
Adults' digital literacy learning (Community) Service Learning conception Digital Stewardship/ Enterprise Learning conception Community Technology Capacity-building conception	Teaching adults basic digital literacy skills Diagnosing learning needs and wants Experimenting with different approaches to teaching others Technology stewarding Leading the learning organisation with a digital inclusion mission	Teaching a variety of adults over time Hearing /reading about others' teaching experiences Developing expertise Living-as-learning and working-as-learning	Understanding adults' digital literacy learning experiences and needs Understanding "low-tech" users information and learning needs Understanding others' experiences of the digital divide	Reflecting on experiences of teaching in light of new information and experience Developing a practical theory of teaching and learning
Community Information Literacy Community Information Literacy conception Blended Community Learning conception	Creating and sharing community/group/organisational information and knowledge using digital media Procedural learning Experimenting with different approaches and techniques	Being Content Editor for more than one community group (Bridging) Exposure to different ways of presenting information Experience with a range of digital technologies and practices over time and in different situations	Understanding the information needs and experiences of others	Reflecting on and experimenting with different ways of using and presenting information for different audiences (Informed Learning)
Community learning practices and methodologies (Community) Service Learning conception Blended Community Learning conception Digital Stewardship/ Enterprise Learning conception Community Technology Capacity-building conception Learning Community conception	Facilitating community and network learning via sharing of information and knowledge in blended online and face-to-face learning communities Performing the role of technology steward Envisioning opportunities for the learning community Leading the learning community	Being Content Editor for more than one community group (Bridging) Participating in a variety of online communities and networks of interest and practice Participating in a variety of community learning experiences in different contexts	Understanding others' experiences of learning Understanding the community Understanding the nature and dynamics of the learning community Understanding how others experience learning	Reflecting on and experimenting with how to facilitate learning in socio-technical environments Reflecting on how technology can be used to serve community goals Critical reflection and evaluation as part of the action learning/action research cycle

The above framework for learning about informal adult learning in Community Informatics reflects the development of knowledge, understandings, skills and literacies in the practice setting (Practice), with the opportunity for Reframing (Usher & Bryant, 1989) through reflection on experience informed by exposure to variation (Bruce, 2006; Pang, 2003) and an understanding of the learners' perspectives, experiences and frameworks of understanding (that is, the "respondent second order perspective") as a hermeneutic practice (Usher & Bryant, 1989; Williamson, 2006). Core internal and external (Illeris, 2007) conditions for learning in the domain of Learning include those described by Mezirow (2009) and Illich (1971) as optimal conditions for adult learning and education adapted to reflect the conditions of learning in a learning-based approach to Community Informatics such as GraniteNet:

- Freedom from distorting self-deception or immobilizing anxiety, ability to become aware of the context of ideas, ability to identify and critically reflect on assumptions (as what the learner brings to the learning situation).

- Empathy, and openness to alternative points of view, including the ability to understand, weigh up evidence and assess arguments objectively and seeing knowledge and truth as always able to be revised in light of new information and experience (a combination of what the learner brings to the learning situation and the affordances of the learning environment's commitment to social and caring objectives and provision of opportunities for exposure to variation and reframing).

- Freedom from coercion (participatory democracy and voluntary participation in learning-related activities).

- Access to accurate and complete information and equal opportunity to participate in the various roles of discourse (as community and digital information literacy and participatory democracy).

- Access to opportunities for active participation in learning-related community socio-technical practices that afford practical learning through experimentation and risk-taking in a supportive learning environment.

- Access to learning technologies, resources, facilities, experts, elders.

This framing of the adult community educator's role in turn has implications for the academy, in terms of how educators – as learning experts – are themselves empowered to perform this role. Usher (1987) describes "practice problems" in the context of Adult Education research as educational problems arising from the practice of adult education that cannot be resolved "by merely applying theory which originates outside educational practice" but through an "iterative process of questioning whereby the practitioner develops a deeper understanding…of the (changing) conditions of practice and of the (changing) relevance of different theories to these conditions" (pp. 63, 86, 91). Related to this is the question about the implications of the GraniteNet study for researching informal adult learning, particularly in a way that informs practice.

8.6. The Question of how is Research into Informal Learning in Everyday Life is best Conducted: Contributions to Methodological Knowledge and Implications for Future Research

Significant knowledge has been gained as a result of the researcher's experimentation with phenomenography and variation theory in this study and also as a result of her comparison of the study's findings with those of other phenomenographic studies. As reported in Chapter 3, the idea of taking a research approach traditionally used to investigate learning in formal education settings into an informal community learning setting presented an exciting opportunity for experimentation: Would it work? What might be revealed that would contribute to knowledge about informal learning in community settings, and specifically, about learning related to people's interaction with digital technologies? In answer to these questions, and with reference to the above discussion, the choice of phenomenography to investigate the nature of participants informal learning in GraniteNet, conceptualised a single site instrumental case study, has proven its fitness for purpose in terms of answering the stated research questions and, indeed, contributing to resolution of the Education practice problems from whence they emerged. This fitness for purpose is evidenced in the findings, their subsequent interpretation and discussion presented in this and earlier chapters of the thesis, and this chapter's presentation of contributions to knowledge. There are nonetheless important learnings about the application of phenomenography to this investigation into learning in GraniteNet with

important implications for future research into informal learning in community settings which are now discussed.

Challenges of the phenomenographic approach to investigating learning in GraniteNet related to the holistic nature of the study's conceptual framework and to the scope and complexity of the phenomena under investigation and their context. Whilst sample size and heterogeneity in the GraniteNet study were highly suitable in terms of reflecting the perspectives of the full range of GraniteNet's participants across its hybrid learning and working environments, data analysis was only barely manageable for a sole researcher, requiring extensive time to complete, potentially precluding timely use of the data for interventions aimed at enhancing learning, and practice, at the local level.

Also linked to the complexity of the holistic conceptual framework guiding the study were challenges presented for data analysis by the ensuing richness of the phenomenographic dataset. For example, at a micro level of analysis, characterisations of conceptions of learning in each of the seven categories reveal conceptions and experiences of the content of learning in multiple content domains (e.g. digital technologies and digital literacies, community information literacy, and content related to community-based management and personal development) and aspects of the process of learning related to each content domain, for example, participatory, mutual, reciprocal learning; learning as acquisition of digital technology knowledge and skills. Micro-level analysis is thus required to identify dimensions of variation and mechanisms of learning with implications, for example, for understanding how people might best learn digital and information literacies, or how community volunteering with a digital technology focus impacts on individuals' learning and civic engagement.

At the same time, meso level analysis related to the learning context or environment identifies the structure of awareness and a developmental trajectory within and across categories of description, illustrating the nature of respondents' experiences of the interface between physical and virtual learning environments, learning barriers and affordances of these environments, and the relationship between individuals' perspectives, their organisational roles and their attitudes towards and use(s) of digital technologies and the internet. Finally, at the highest, macro level of analysis, best represented in the study's outcome space diagram, the findings are

interpreted to shed light on the particular configuration of community, organisational, socio-technical and human factors that, in combination, constitute a unique hybrid community learning environment with implications for supporting the development and implementation of community learning and Community Informatics projects in this and comparable rural communities.

Constraints related to the manageability of the study for a sole researcher and the need to preserve the communicative validity of the findings preclude an in-depth analysis and interpretation of the findings at each of these levels. Rather, the researcher needs to be pragmatic and focus on the most relevant and important aspects of the findings and consider their implications for better understanding, facilitating and accounting for learning in GraniteNet and for clearly communicating these to the reader. Future studies involving sole researchers should therefore focus on a similar sample size but with a respondent group drawn from among a pool representing a more defined and specialised cohort with a common, broad perspective in relation to the phenomenon under investigation in its specific context. Alternatively, different cohorts could be allocated to individual researchers working as part of a collaborative project. This would result in a reduced cognitive load for individual researchers and reduced time required for data analysis and interpretation, potentially resulting in a quicker turn-around time for dissemination of findings and sharing of knowledge with practitioners in the research setting. Even better, practitioner-researchers located in the research setting could work alongside researchers in the tradition of action research in Education.

With reference to how inquiry into informal learning in community settings can best be conducted, the study's contribution to methodological knowledge is related to the application of phenomenographic research to an investigation into the nature and role of adults' conceptions and experiences of learning in the context of this Australian rural Community Informatics project, and specifically, to knowledge about particular techniques and instruments that can be used to good effect to investigate the submerged iceberg (Livingstone, 2001) of adults' informal learning. These contributions include: an holistic conceptual and analytical framework to guide phenomenographic inquiry into people's informal learning in community settings from the learner's perspective; a phenomenographic interview protocol incorporating mind mapping (Buzan & Buzan, 2003) and other techniques to maximise validity in data

collection; and a ten step phenomenographic data analysis procedure designed to make the so-called "black art" (Cope, 2004, p. 11) of phenomenographic data analysis more transparent. Together, these frameworks, tools and techniques constitute potentially useful additions to any Phenomenographers toolkit. Further, the philosophical, conceptual and practical tools and resources of phenomenography have proven their fitness for the purpose of investigating the nature of informal learning in context.

On a final, reflective note, it was this researcher's aim to conduct a reflexive inquiry into human learning in context and, to that end, a reflexive research design was used to maximise interpretive awareness and ensure the trustworthiness of the results and overall credibility of the study. In spite of her attention to these considerations, this researcher has been unable to dampen what has clearly emerged as an unashamedly "celebratory account" (Groundwater-Smith & Mockler, 2007) of learning in GraniteNet. That said, this researcher is confident of the trustworthiness of her findings, the rigour of the research and of her study's contribution to knowledge, the latter of which the reader will be the ultimate judge.

8.7.   Conclusion: Blending the Space of Places with the Space of Flows

The findings of the GraniteNet case study support Edwards, Ranson and Strain's (2002) proposition that lifelong learning needs to be about more than individuals learning to adapt to change. Rather, it should be about individuals working together and harnessing knowledge, expertise, tools, resources, networks and infrastructures in their local, proximate communities and more dispersed communities and networks of interest and practice to enact change, for the better, in their own lives and in the lives of others in their communities. This will involve harnessing the affordances of digital technologies, networks and "habitats" (Wenger et al., 2009, p. 3) and hybrid learning environments to build a culture of lifelong learning in which individuals will learn to act, learn to learn, learn to contribute, learn to commune, learn to collaborate and learn to create and construct their preferred futures. If this is to be the goal of lifelong learning, then lifelong learning needs to be conceptualised from a capacity-building perspective based on principles of agency, reciprocity, altruism, digital inclusion, creative enterprise and community for both individual and community benefit. These authors appear to align with Livingstone's (2001) view that

"the proliferation of information technologies and exponential increases in the production of information have created greater opportunities for informal learning…for people in all walks of life" (cited in Merriam et al., 2007, p. 21) and suggest that we may actually be "witnessing the emergence of…the learning society…that takes human beings rather than educational institutions as its beginning point" (p. 25). Overall, these results indicate how rural community technology projects such as GraniteNet can create hybrid learning environments that blend "the space of places" with "the space of flows" perhaps thereby transforming our rural communities from "landscapes of despair" (Castells 2010, p. xxxvi), into lifelong learning landscapes.

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Appendices

Appendix A
A Situated Field of Study Approach to the Review of Literature Informing the Study

Mapping the terrain of the changing landscape of Adult Education research.			
PRELIMINARY SCAN		Research in Adult Education and Lifelong Learning	
Contributions from the primary Foundation Disciplines: • Philosophy • Psychology • Sociology	Secondary contributing disciplines: • Cultural Anthropology Library and Information Sciences • Cognitive Neuroscience	Specialist Education Studies: • Adult learning • Lifelong learning • Adult Community Education/adult community learning • Informal Education/learning • Workplace learning • Adult literacy, digital and multiliteracies • Digital Learning Environments	Cross-disciplinary fields of scholarship and practice: • Community (Development) Studies • Learning Communities • Community Informatics • Community Information Literacy
STAGE 1	Overview of theorising about adults' everyday learning from the contributing disciplines (Parent theories informing the study)		

STAGE 2	Review of literature theorising informal adult learning in the digital era (Research Problem Theories): Theorising about adult learning from three broad theoretical orientations		
Theories of adults' everyday learning	Theories and models of informal learning	Changing conceptions of adult literacy for lifelong and life-wide learning in the digital era	Critical review of research on the impact of digital technologies on adults' informal learning

STAGE 3	Theories and conceptions of adults' informal learning in three practice fields with instantial relevance to the GraniteNet study	
Learning in geographical learning communities	Learning in associational life and volunteer work	Learning in Community Informatics

STAGE 4	Implications for investigating learning in GraniteNet
Important themes, emerging issues and knowledge gaps	Conceptual and methodological considerations for the study

Appendix B
Mapping Big Ideas and Parent Theories from the Scholarly Literature from the Nominated Fields of Study

Disciplines/ Applied fields of Scholarship	Big Ideas	Parent Theories, Philosophies	Key Concepts, Constructs	Related learning theories	Main theorists, philosophers, scholars
Group 1: Understanding relationships between people and technology in civil society + Explaining societal structure and social phenomena as effects of technological change					
Sociology, Philosophy, Psychology Information Sciences Social Informatics Community Informatics (Community) Information Literacy	Globalisation Civil society Network Society thesis Information Society thesis Digital divide, inclusion Information (in)equality	Pragmatism Structuration theory Cultural Historical Activity Theory, Liquidity, (Actor) Network Theory, Diffusion theory, Social shaping thesis, Technological determinism, Systems theory, Complexity theory Information behaviour	Social networks, nodes, flows Innovation, knowledge networks Information literacy, inequality, exclusion, Technology duality, appropriation, Participatory design, Pragmatic technology Sociotechnical systems, environments	Network(ed) learning Distributed intelligence/cognition Activity theory Technology practices, technologies-in-use Constructionism Information literacy Informed learning Cognitive apprenticeship Blended learning	Castells, Bauman, Giddens, Wertsch, Bijker Granovetter, Gellner, Orlikowski, Latour, , Dewey, Bernstein, Kling, Warschauer, Hoffman, Gurstein, Turkle, Papert, Saljo, Engestrom, Selwyn, Stillman, Carroll, Derwin, Chatwin, McLuhan, Resnick, Bruce

Disciplines/ Applied fields of Scholarship	Big Ideas	Parent Theories, Philosophies	Key Concepts, Constructs	Related learning theories	Main theorists, philosophers, scholars
Group 2: Understanding and theorizing about adults' learning in civil society					
Sociology, Philosophy, Psychology Adult (Community) Education/Adult learning Information literacy Community development Community learning Informal Education, Informal learning Lifelong Learning Self-directed Learning Service Learning	Civil society Participatory democracy Community Lifeworld The everyday Social capital Informal, everyday learning Learning cities, communities, regions *La vie associative* Third age Social inclusion/ exclusion Lifelong and life-wide learning	Pragmatism Communitarianism Cultural Historical Activity Theory The forms of capital (cultural, social, economic) Human capital theory Social capital theory Complexity theory Social network theory Participatory democracy theory Situated cognition Social learning theory Sociocultural learning theory Vertical and horizontal knowledge discourses	Practical reasoning Tacit and explicit knowledge Reflection-in and –on-action Adult Literacy/literacies Reflexivity Field and habitus Biographicity Civic/community engagement, participation, Social exclusion Community learning, capacity-building, empowerment Service learning Emergence Learning lives, careers, transitions Third age learners Expansive learning environments Legitimate peripheral participation	Andragogy Embodied learning Community inquiry Social constructivism Reflexivity theory Reflective practice Single and double loop learning Biographical learning Social learning (capital) Self-directed learning Situated learning Transformative learning Experiential learning Community learning Relational learning Self-directed learning Social (learning) capital Transformative learning Community learning Communities of practice Learning communities Intention-based learning Enterprise learning Informal and incidental learning	Dewey, Freire, Gadamer, Habermas, Bernstein, Foley Bourdieu, Putnam, Polanyi, Florida, Knowles, Rogers, Maslow, Williams, Jarvis, Field, Edwards, Hall, Biesta, Usher, Brown, Heath, Duguid, Bandura, Wenger, Rogoff, Mezirow, Kolb, Illich, Argyris, Schon, Williamson, Alheit, Tough, Houle, Hager, Eraut, Boud, Engestrom, Billett, Illeris, Ellestrom, Foley, Marsick, Watkins, Merriam, Caffarella, Fenwick, Tennant, Kegan, Schugurensky, Duguid, Lave , Bruner, McGivney, Livingstone, Falk, Findsen, Kilpatrick, Golding, Halliday, Candy, Bruce, Bron,

Disciplines/ Applied fields of Scholarship	Big Ideas	Parent Theories, Philosophies	Key Concepts, Constructs	Related learning theories	Main theorists, philosophers, scholars
Group 3: Explaining the relationships between and impacts of societal and technological change and adults' learning					
Sociology, Philosophy, (Educational) Psychology Adult (Community) Education, Adult learning Informal Learning Cognitive neuroscience Community Informatics e-Learning/Digital learning environments New/Multiliteracies	Knowledge Society thesis Learning Society thesis Lifelong & life-wide learning Learning networks Learning futures, learning lives Digital learning environments, Learning ecologies Virtual worlds Gamification	Cognitivism Individual, social constructivism Situated cognition Community, collaborative inquiry Social learning theory Distributed cognition/ learning Constructionism	(Lifelong) learning networks Digital literacy/literacies Digital divide, learning divide New/multiliteracies, Community Information Literacy, Sociotechnical literacy practices Millennials, Digital Natives/ Immigrants, Digital habitats, Virtual worlds, Learning ecologies, Learning 2.0, Bricolage, Digital habitus Sociotechnical capital Learner generated contexts, polycontextuality Socio-technical learning environments	Network(ed) learning (Individual/social) constructivism Reflexivity Social learning Situated learning, cognition Distributed cognition Communities of practice Socio-cultural learning Connectivism, Constructionism Heutagogy Emergent learning Expansive learning Informed learning Cognitive apprenticeship Learning ecologies E-learning	Selwyn, Engestrom, Wenger, Downes, Siemens, Candy, Seeley Brown, Dede, Hayes & Kenyon, Cross, Haythornethwaite, Heath, Carroll, Candy, Erstad & Sefton-Green, Chisolm, Bruce, Tuominen & Savolainen, Prensky, Fischer, Olstad, Candy, Erstad

Appendix C
Literature Sources and Criteria for Inclusion and Exclusion

Primary Fields of Scholarship and Recommended Inclusions for the Literature Review	Sources of Scholarly Literature
1. Informal adult learning in a digital era **Primary related fields of scholarship** • Adult Education/Learning • Adult (Community) Education • Lifelong Learning • Workplace Learning • Self-directed Learning • eLearning, digital learning environments/networks • New/Multiliteracies **Recommended inclusions for the literature review based on instantial relevance criteria** ✓ Literature dealing with adult learning, digital information communications technology, society and change in western democracies in the 'global North' plus Australia and New Zealand ✓ Literature dealing specifically with adult learning in community-based organisations, voluntary associations, community groups and social enterprises where learning activity occurs in both physical and virtual spaces and places ✓ Theory and big ideas from the literature specifically relevant to third sector social life, civil society and community learning ('learning community') activity	**Journals – Adult Education and Lifelong Learning** *Adults Learning (UK)* *Adult Education Quarterly (USA)* *Australian Journal of Adult Learning* *ERIC Clearinghouse on Adult, Career & Vocational Education (USA)* *European Journal for Research on the Education and Learning of Adults* *International Encyclopaedia of Adult Education* *International Journal of Lifelong Education (UK)* *Journal of Adult and Continuing Education (Canada)* *New Directions for Adult and Continuing Education* *New Review of Information and Literacy Research* *Studies in Continuing Education* *Studies in the Education of Adults* *The Canadian Journal for the Study of Adult Education (CJSAE)* **Journals – Sociological, Anthropological and Community Studies** *American Journal of Sociology* *Australasian Journal on Ageing* *Journal of Human Development* *Community Development Journal* *Mind, Culture & Activity*

✓ Literature specifically dealing with digital and information literacies in relevant learner populations and settings	*Rural Society (Aus.)* *Social and Cultural Geography*
3. Learning in associational life and volunteer work *(la vie associative)* **Primary related fields of scholarship.** • Adult Education/Learning • Adult (Community) Education • Lifelong Learning • Informal Education/Learning • Workplace Learning • Self-directed Learning • Community Information Literacy **Recommended inclusions for the literature review based on instantial relevance criteria.** ✓ Theory and big ideas from the literature specifically relevant to third sector social life, civil society and community learning ('learning community') activity ✓ Literature dealing specifically with adult learning in community-based organisations, voluntary associations, community groups and social enterprises where learning activity occurs in both physical and virtual spaces and places Literature on organisational and workplace learning **where it offers important insights applicable to understanding learning in GraniteNet**	**Journals – Education and Technology** *British Journal of Educational Technology* *Computers and Education* *Communication Technology (IJEDICT)* *International Journal of Education and Development using Information and Communications Technologies* *Media, technology and Lifelong Learning* *Media and Society* **Journals – Education Studies (General)** *Australian Educational Researcher* *British Journal of Education Studies* *British Journal of Education Research* *British Educational Research Journal* *Culture & Psychology* *Educational Researcher* *EDUCAUSE Review* *European Journal of Education* *International Journal of Pedagogies & Learning (Aus.)* *Journal of Adolescent and Adult Literacy* *Journal of Transformative Education* *Scandinavian Journal of Educational Research* *Education Research Review* *International Journal of Pedagogies and Learning*
4. Learning in Community Informatics **Primary related fields of scholarship.** • Community Informatics • Community Information Literacy • Workplace Learning	**Journals – Library and Information Sciences** *Information Systems Journal* *Journal of Librarianship and Information Science* *Journal of the American Society for Information Science and Technology*

- eLearning/Digital Learning Environments
- New/Multiliteracies

Recommended inclusions for the literature review based on instantial relevance criteria

✓ Big ideas impacting significantly on/interfacing with third sector (e.g. network society, digital economy)

✓ Literature dealing with everyday digital technologies and the internet for communication and learning as well as digital technologies and infrastructures specifically used in community networking and for the purposes of digital inclusion and community building.

✓ Literature making specific reference circumstances and issues in comparable regional and rural towns and communities in the 'global North' plus Australia and New Zealand

✓ Literature dealing specifically with adult learning in community-based organisations, voluntary associations, community groups and social enterprises where learning activity occurs in both physical and virtual spaces and places

✓ Literature specifically dealing with digital and information literacies in relevant learner populations and settings

Library and Information Science
Library Quarterly
Library Trends
Literacy and Numeracy Studies
The Australian Library Journal
The Information Society: An International Journal
The New Review of Information and Literacy Research

Journals – Technology and Society
AI and Society
British Journal of Educational Technology
First Monday
Journal of Community Informatics
Journal of Education and Development using Information and Communication Technology (IJEDICT)
Media and Society
Media, Technology and Lifelong Learning

Journals – Vocational education, organisational and workplace learning
International Journal of Advanced Research in Management and Social Sciences
Journal of Workplace Learning
Vocations and Learning
Journal of Vocational Education and Training
Voluntas: International Journal of Voluntary and Non-profit Organisations

Monographs and Edited Books
Selected edited books and monographs focusing on informal, adult learning and e-learning, lifelong learning, workplace learning, volunteer learning in community organisations and associational life, community and networked learning, learning

	in (rural) (geographic) learning communities (see reference list)
	Conference Proceedings and Symposia Selected conference proceedings and symposia (e.g. ESREA, Lifelong Learning, Adult Learning, Informal Learning, Adult Education Research Conference, Community Informatics Research Network Conference, EDEN, EDUCAUSE) (see reference list) **Online Collections, Databases and Websites** Adult Learning Australia (ALA) ERIC Clearinghouse on Adult, Career and Vocational Education European Society for Research on the Education of Adults Government organisations and peak bodies – key policies and reports (Aust.) Informal Education Homepage (InfEd) (USA) National Centre for Vocational Education Research (NCVER) (Aust.) National Institute for Adult and Continuing Education PASCAL International Observatory (UK) Stephen's Web (Stephen Downes) International government organisations and peak bodies—key policies and reports

Appendix D
Contributing Disciplines and Parent Theories

Primary Foundation Disciplines	Psychology (Humanistic, Behavioural, Cultural, Cognitive)	Philosophy (of Adult Education/Learning)	Sociology of Education
Prominent theorists	Bandura, Billett, Brookfield, Brown, Collins & Duguid, Bruner, Engestrom, Eraut, Heron, Illeris, Kegan, Knowles, Kolb, Maslow, Mezirow, Polanyi, Riegel, Rogers, Skinner, Schon, Siemens, Downes, Tough, Vygotsky	Biesta, Dewey, Edwards, Foley, Freire, Foucault, Hager, Halliday, Illich, Selwyn, Sen, Tennant, Williams, Williamson	Alheit, Bernstein, Boud, Bourdieu, Coleman, Davis & Sumara, Downes, Field, Granovetter, Habermas, Hodkinson, Jarvis, Lave & Wenger, Leontev, Putnam, Usher, Vygotsky, Williamson
Key constructs	Behaviour, self (self-efficacy, self-identity, self-formation, self-actualisation, subjectivity, personal agency), motivation, hierarchy of needs, embodied learning, social learning, experiential learning, learning as construction, internalisation, meaning schemes, frames of reference, reflexivity, reflection in and on action, andragogy, dialectical thinking, tacit knowledge, personal and cultural knowledge, core learning conditions, situated and distributed cognition, connectivism, activity theory, expansive learning	Continuity, interaction, problem-based learning, problem-posing education, learning as community inquiry, democratic education/education for democracy, education for liberation from oppression, adult education as a resistant practice, de-schooling society, informal education, education as a cultural phenomenon, lifelong learning as a technology of the self, capabilities, really useful knowledge, public pedagogy	Technical-rational, practical-hermeneutic and emancipatory knowledge practices, forms of capital, field and habitus, social capital theory, tacit knowledge, lifeworld, horizontal and vertical knowledge discourses, biographicity, social networks and ties, the everyday, complexity theory, systems theory, emergence, expansion, learning networks and ecologies, connectivism, hermeneutics

Propositions about adults' everyday learning and knowing	Learning is a behavioural adaptation to influences from the external environment Learning is a process of individual knowledge construction and of meaning-making. Learning is a rational process of experimental responsiveness to change. Learning comprises content, incentive and interaction dimensions. Adults have distinctive orientations to and experiences of learning. Adults' self-concept, identity, agency, self-efficacy and motivation all impact on their learning. Adults' learning is self-directed, linked to life experience, roles, needs and motivations. Dialectical thinking, metacognition, self-directedness, criticality and reflexivity are characteristics of mature adults' learning processes. Adults learn from their environment, from those around them, and through their experience and interactions (dialogue) with others. Everyday learning is interpreting new experiences in terms of earlier ones and relating new information to existing knowledge. Cognition is situated in specific contexts and can be distributed among actors. Knowledge can be either tacit or explicit, codified or uncodified, individual or collective Learning is an activity-generating activity	Learning is a transaction between self and world. Learning is a relational and embodied phenomenon. The learner's own experience is central to learning; interaction and continuity are central to an educative experience. Learning is intelligent action. Learning is the developing capacity to make context-sensitive judgments. Nurturing the desire and capacity for ongoing learning throughout life is the ultimate goal of education. Education is both a human right and a means to liberation from disadvantage and oppression. Education is a cultural phenomenon. Adults' life experiences, life problems and concerns are the points of departure for learning. Education is appropriated by systems and the powerful for utilitarian purposes. Critical thinking, critical literacy, questioning, dialogue, agency and awareness-raising are the goals of Adult Education (Adult) Education should be democratic and promote dialogue, democracy and social transformation.	Individuals' learning must be understood in the social and historical contexts of its occurrence Learning is a process of becoming. Learning is biographical. Learning is a social phenomenon; learning and knowledge are situated in social practices. Participation in social practices and associational life implicates learning. Learning draws on and builds social capital. There are different kinds of knowledge, different ways of knowing and different knowledge discourses. Knowledge has three constituative approaches: technical-rational, practical-hermeneutic and emancipatory Diverse social relationships and networks facilitate the sharing of different forms of knowledge. Learning is an emergent property of complex adaptive systems; knowledge is an emergent property of interactions between networks of learners Learning and knowledge are distributed and exist in and across networks and nodes.

Appendix E
Artefact Analysis

REFLEXIVE ANALYSIS OF RESEARCHER ARTEFACTS

Questions to guide reflexive analysis of the researcher's philosophical and epistemological assumptions reflected in researcher artefacts:

1. What are the researcher's epistemological assumptions about learning, and how learning should be conceptualised and researched, and how do they influence the research design?
2. Which conceptions of learning are reflected in these perspectives? Are there any inherent contradictions or conceptual flaws? Is there evidence of a change in perspective over time?
3. What unquestioned assumptions about the nature of learning are inherent in these perspectives that could influence the way the research is designed and conducted?

Artefacts subject to analysis include:

- Research Methods Essay (2006)
- Emergent Researcher Mind Map (2007)
- Extract from Book Chapter (2008)
- Extract from Journal Article (2009)
- Researcher's Definition of Learning (PhD Research Proposal, 2010)

Table   0-1
Reflexive Analysis of Philosophical and Epistemological Assumptions Embedded in Researcher Artefacts

Artefacts	A: The nature of learning, knowledge and knowing - Assumptions, prejudices, understandings				
	Teleological	**Axiological**	**Ontological**	**Epistemological**	**Theoretical**
1. **Research Methods Essay (2006)**	Human betterment	Human betterment	Multiple realities, perspectives	Primacy of the learner's personal experience Decentred knowledges (postmodernist)	Humanist Pragmatist Theories which guide and inhere in practice
2. **Emergent Researcher Mind Map (2007)**			Non-realist	Knowledge inheres in practice Subjective knowledge Stable meanings independent of the circumstances of their use	Praxis Fitness for purpose
3. **Extract from book chapter (2008)**	Learning = enabling people to live their lives fully and confidently Build social capital Civic engagement and participation	Lifelong learning		Decentred knowledges vs expert knowledge Co-generative	
	Value of learning for individual, family and	Lifelong and life-wide learning			

	Artefacts					
4.	**Extract from Journal Article (2009)**	community capacity building and resilience	Community learning Sustainability			
5.	**Definition of Learning (PhD Research Proposal, 2010)**	Adaptation Transformation Development	Learner self-direction Reflection Reflexivity		Learning involves mental, emotional, physical and practical Existential, activity-based, intentional **and** incidental? Experienced in the context of everyday life in formal and informal settings Meaning schemes, frames of reference, habitus	Embodied learning (Dewey) Situated, pluralist Humanist, rationalist
	Artefacts	**B: Researching learning - Assumptions, prejudices, understandings**				
		Teleological	**Axiological**	**Ontological**	**Epistemological**	**Methodological**
1.	**Research Methods Essay (2006)**	Interpret	Human betterment Head, heart, hands, critical spirit	Relativism	Pluralism	Preference for emic perspective over etic
2.	**Emergent Researcher Mind Map (2007)**	verstehen – empathic understanding Explore Interpret Describe	Personal link between researcher and research Cui bono? Whose interests are being served? Centrality of researcher values	Relativism Non-realism	Qualitative is queen Engagement with subjective meanings that social actors give to their actions and environments	Preference for objectivity and a logical, systematic approach Empirical Hermeneutic Suspension of values for impartial analysis and interpretation

	Explain Educate, Inform	Credibility Impact Utility Impartiality			Question empirical assumption that accurate and reliable data only obtained via observation of behaviour Preference for qualitative data Combination of induction and deductive argument
3. **Extract from book chapter (2008)**	Understand the nature and impact of learning on individuals and communities Understand relationships among people in communities Challenge assumptions and power relations	Centrality of learning Abiding importance of place to people Achieving positive outcomes for individuals and communities Trustworthiness Participation Ethical and sustainable engagement	Community = social-physical infrastructure Interface between meso and micro level realities (life-world) Multiple realities		Choice of method influenced by setting Privilege emic perspective Role of researcher not as expert outsider Participatory Action Research
4. **Extract from Journal Article (2009)**	Understand the nature of phenomena Effect social change	For benefit of participants Intersubjectivity	Non-realism	Intersubjectivity	Humanistic, phenomenological and naturalistic inquiry In depth, intersubjective conversations in the field
5. **Definition of Learning**					

Appendix F
Ethical questions guiding the researcher's management of her role as peripheral participant (Stake, 2005; Carroll, 2009).

Ethical questions for the researcher as peripheral participant	How they apply to and are addressed in the GraniteNet study
How much should the researcher participate personally in the activity of the case?	• Relates to the problem of researcher enmeshment described by Carroll (2009), whereby "it becomes impossible to differentiate the 'models' we are developing and investigating from our own personal identities"(p.8). • Partly addressed through progressive distancing of researcher from day-to-day management and activities of the organisation since 2009 • Researcher's acknowledgment of the implications of her own "historicity" and "futuricity" (Falk & Kilpatrick, 2000, p. 18) with the organisation for data collection, analysis, and interpretation via reflexivity and management of same through interpretive awareness (refer discussion of research quality in sub-section 3.3.4)
How much to pose as 'expert'? How much to provide interpretation about the case?	• Both emic (insider) and etic (outsider) perspectives applied to obtain "a stereoscopic perspective" on the phenomenon of interest (Pike, 1957, p. 114) • The combination of the researcher's acknowledged expertise as an Adult Educator and her experiential knowledge of GraniteNet enables her to "embrace [the case] intellectually" and experientially"(Stake, 2005, p. 455)[this researcher's emphasis], thus affording the researcher a significant interpretive advantage
Whether to be a neutral observer or evaluative, critical analyst? How much to advocate for a position?	• Interrogation of the stated research questions requires the researcher to assume the role of evaluative, critical analyst rather than a neutral observer of activity, reflecting a stronger focus on the instrumental, rather than intrinsic, case study (Stake, 2005). • The researcher's desire to prove significant and valuable learning occurring for participants is acknowledged, and is validated by Stake (2005), who maintains that the researcher's valuing of the study is expected, and by Sin (2010, p. 315) who acknowledges that "the researcher is not indifferent to the phenomenon or the elements of the overall research", and that therefore "the researcher's voice in reporting the findings is…inevitable".
How much to try and serve the needs of anticipated readers of the research? Whether or not to tell the case as a 'story'?	• The requirement to make a valuable contribution to the "advancement of knowledge" necessitates a strong focus on "communicative validity" (Akerlind, 2002, p. 13; Sin, 2010, p. 307); therefore, "the case researcher needs to provide grounds for validating both the observation and the generalisation" (Stake, 2005, p. 456). • The choice of phenomenography and a stronger focus on instrumental, rather than intrinsic, case study, preclude a story-telling, narrative approach to reporting. • Instead, the researcher has focused on describing the case in sufficient detail to allow the reader to make comparisons with other cases and to maximise the "transferability" (Guba & Lincoln, 1985)of the findings, as recommended by, in this case, via the reader's engagement with the phenomenographic outcome space in the tradition of "naturalistic generalisation" (Stake, 2005, p. 454).

Appendix G
Distinctive features and principles of the phenomenographic research approach (Marton, 1988) and how they have been applied in the GraniteNet study.

Distinctive features and principles of the phenomenographic research approach (Marton, 1988) and how they have been applied in the GraniteNet study.

Distinctive features of phenomenography (Marton, 1988)	How they have been applied in the GraniteNet study
Researching learning from the learner's perspective The phenomenographic researcher adopts a "second order perspective" in order to "characterize how things [situations, phenomena] appear to people", how they are "apprehended, thought about or perceived (Marton, 1988,pp. 179, 181).	Respondents' conceptions and ways of experiencing learning in the context of their involvement in GraniteNet and/or use of the community web portal constitute the object of study and unit of analysis
A focus on variation The researcher focuses on variations [differences], rather than commonalities, in these understandings and experiences as the "phenomenographic knowledge interest" (Marton, 1988, p. 180).	Discovery of conceptions in the data via iterative analysis of respondents' interview transcripts and mind maps constructed by respondents during the phenomenographic interviews focuses on identifying variation, rather than commonality, in ways of seeing and ways of experiencing learning in GraniteNet
A focus on the most distinctive, educationally significant aspects When characterising these understandings and experiences, the phenomenographic researcher needs to focus on "the essential, the most distinctive, the most crucial structural aspect of the relation between individual and phenomenon" (Marton, 1988, pp. 181-182).	Conceptual and analytical tools and procedures adapted and devised by the researcher to analyse referential and structural components of conceptions and construction of a set of dimensions of variation and critical differences help the researcher to identify the most distinctive aspects of the relation between the individual and their conception and experience of learning in GraniteNet
Categories of description These characterisations are described in "relational, experiential, content-orientated and qualitative" terms and are categorised in the form of "categories of description" that represent "the most important result of the research enterprise" (Marton, 1988pp. 181-2).	Results of the iterative phenomenographic analysis are presented as a set of structurally related, inclusive categories of description representing the the researcher's understanding of the respondents' understandings and experiences of the phenomena.
Findings presented in the study's "outcome space" The categories of description form the "outcome space, a concept referring to a set of possibilities" (Marton, 1988, p. 189)—that is possible variations in the way that a particular phenomenon is seen or experienced, highlighting the structural relationships among the categories and their conceptions.	The categories of description of learning in GraniteNet are presented in the study's phenomenographic outcome space as a set of structurally related, qualitatively different ways that learning is seen and experienced by respondents, constituting the collective learning consciousness of GraniteNet at the time of the study.

Three key principles of the phenomenographic approach	How they are applied in the GraniteNet study
Heterogeneity of the sample Allowance for ascertaining maximum possible variation of conceptions and experiences among the target population. This principle privileges heterogeneity over representativeness in sampling decisions (Akerlind, 2005).	Heterogeneity is the primary consideration in devising the sampling logic for the study (refer Section 3.4)
The respondent second order perspective A reliance on "sources of information by means of which we can gain understanding of how people conceive of various aspects of their world" (Marton, 1988, p. 197). This includes individuals' own narratives of their experiences and expressions of their understandings and perspectives as may be articulated through participation in semi-structured interviews, for example, or expressed in drawings and other products and artefacts, or indeed demonstrated in their behaviour (Marton, 1988).	The choice of a structured interview incorporating a mind mapping activity as the primary data collection technique reflects this consideration.
Discovery and categorisation of conceptions by the researcher Iterative, dialectic analysis of data that allows for "discovery of conceptions", interpretation and differentiation into "pools of meanings" and eventual stabilization of the system into "categories of description", which constitute the results, or the "outcome space" (Marton, 1988, p. 198).	The systematic data analysis procedure implemented in this study, described in Section 3.4.5, builds on these key principles of phenomenographic data analysis and interpretation.

Appendix H
Five elements of interpretive awareness to guide the study.

1. **Data collection instruments and protocol design**: The design of the interview questions and protocols seeks to maximise the opportunity to access respondents' true conceptions and experiences of phenomena and minimise the likelihood of the researcher's own preconceptions 'infecting' the data. This is considered a critical aspect of phenomenographic studies as it is maintained that the interview respondents' conceptions exist as concrete aspects of the world that can be discovered by the researcher (Bruce, 2006; Marton & Booth, 1997; Cope, 2004). A key strategy adopted by the researcher in the design of the interview protocol is to use mind mapping (Buzan & Buzan, 2003) in the initial stage of the interview, as discussed in the detailed description of the phenomenographic interview procedure in Chapter 4.

2. **Researcher interview technique**: Specific strategies designed to minimise researcher influence on respondents' articulation of their conceptions and ways of experiencing during the interview process (Sin, 2010, p. 313; Cope, 2004) include using the aforementioned mind-mapping technique; conducting and critically reflecting on pilot interviews; asking follow-up questions to clarify meanings; avoiding introducing new terms into the interview conversation; not asking leading questions, paraphrasing or correcting interviewees' responses; and being careful not to jump to conclusions (Akerlind, 2005).

3. **Maintaining data quality and integrity**: Sin makes the point that "transcription changes oral discourse to text" (2010, p. 308), potentially resulting in a loss of meaning and/or opportunity for researcher misinterpretation of meaning. This problem is further exacerbated if the interviews are transcribed by someone other than the researcher herself, as is the case in this study. Therefore, strategies to address this potential problem of data quality and integrity include the researcher making notes on an interview protocol sheet during and immediately post-interview on

contextual features of each interview and also listening to the audio recordings and making notes on the transcripts about intonation that would otherwise not be apparent in the transcripts themselves. This serves to enhance the process of 'discovery' of conceptions in the data and to address the issue of researcher bias highlighted by Cope, above (2004). Respondents' mind maps are used as a further strategy to enhance confirmability of the interpretation of utterances in the interview transcripts.

4. **Systematic, reflexive and transparent data analysis processes:** These are used to maximise the defensible interpretation of the data (Akerlind, 2002), which is also linked to reliability (Akerlind, 2012), including:

   - devising and following a systematic procedure for data analysis that adheres to established phenomenographic principles and processes

   - applying critical questioning at key stages of data analysis to challenge the researcher's own interpretations (for example: *On what basis can I make this interpretation about a particular conception or 'way of experiencing' a phenomenon being present in the data? How likely is it that my own biases and preconceptions might have influenced my interpretation?*)

   - documenting each stage of the data analysis process, and providing examples to illustrate (also outlined in 3.4.5.1) and in the data analysis templates and artefacts at the Appendices, and

   - checking interpretations with other researchers for "communicative validity" or "confirmability" (Sin, 2010, p. 307), undertaken at key stages in the research process involving doctoral supervisors and critical friends.

5. **Presentation of findings**: research findings must be presented honestly and accurately, which relies on the integrity of the researcher (Sin, 2010) and in the end, is a question of trust (although can to some extent be evidenced through adherence to principles 1-4 above contributing to trustworthiness (Collier-Reed, Ingerman & Berglund, 2009). The findings

of a phenomenographic study – the outcome space comprising of categories of description devised by the researcher and presented in Chapter 5 – are judged in terms of their distinctiveness, logical and inclusive relationships and parsimony (Marton & Booth, 1997).

Appendix I
Characteristics of respondent sample.

Table   0-2
Distribution of sample for GraniteNet study in terms of respondent characteristics and nature and duration of involvement in GraniteNet (P1-P4 = Pilot Interview respondents; 2.1-2.16=Phase 2 interview respondents)

Total number of interview respondents = 20																
Culture	Ability	Gender		Age			Length of Involvement in GraniteNet			Role/s in GraniteNet#						
CALD* (incl ATSI**)	PWD ♣	M	F	Youth (>25 yrs)	Adult	Aged (>65 yrs)	New (current)	Experienced (current)	Ex (not current)	Board	Other Vol	Trainer	Content Editor	Tech Supp	Seniors kiosk Customer	Blogger
2.11 2.7 P3	2.2 P4	2.12 2.10 2.8 2.6 2.3 2.2 P2	2.16 2.15 2.14 2.13 2.11 2.9 2.7 2.5 2.4 2.1 P4 P3 P1	2.12 2.10 P3	2.16 2.15 2.14 2.11 2.7 2.6 2.5 2.4 2.2 P4 P2 P1	2.13 2.9 2.8 2.3 2.1	2.12 2.10 2.7 2.5 P4 P3	2.16 2.15 2.14 2.13 2.11 2.9) 2.8 2.4 2.3 2.2 2.1 P1	2.6 P2	2.14 2.7 2.5 2.2 2.1 P2 P1	2.12 2.9 2.7 2.5 P3	2.12 2.10 2.9 2.7 2.3 2.2 2.1	2.16 2.15 2.11 2.8 2.3 P4 P3 P2	2.10 2.6 2.4 2.3 2.2	2.13 2.8	2.11 2.4
3	2	7	13	3	12	5	6	12	2	7	5	7	8	5	2	2

*CALD = People from culturally and linguistically diverse backgrounds
**ATSI= People of Aboriginal or Torres Strait Islander descent
♣PWD = People with a significant disability or impairment
includes individuals performing more than one role simultaneously
"current" refers to respondents actively participating in GraniteNet activities at the time of the study

Appendix J
Research Questions and Sub-questions Mapped to Data Sources, Data Collection Techniques and Instruments and data analysis processes.

RQ1: What are the qualitatively different ways that learning is perceived and experienced by GraniteNet participants and portal users?

Research Sub-Questions	Interview protocol (Steps 1-6)		Questionnaire Data	GraniteNet Artefacts and Analytics	Data Analysis Tools and Processes (refer attached protocol)
	Mind maps (artefacts)	Transcripts (talk, utterances)			
i. How is GraniteNet (GN) perceived by its participants and users? (ASPECT: *CONTEXT AND ENVIRONMENT*)#	**Structure of Awareness of GN** (What is focal in awareness, thematised? How is GN delimited from its broader context?) + **Referential** (How are the meanings reflected in the mind maps connected to the meanings articulated	**Referential** Meaning (nature, significance and value of GN?) + **Structure of Awareness** (What is focal in awareness, thematised? How is GN delimited from its broader context?)	No data directly for RQs, however: • Some questions serve as stimulus material for reference during interview • Demographic data - characteristics of respondents etc. drawn on for case description • Nature and duration of involvement in GN links to	Analytics data, portal artefacts and website activity (may) inform: • GN case study description • analysis of activities of GN communities of interest – linked to sampling logic • possible comparison of artefacts with	Phenomenographic analysis of: • Interview audio and transcripts • Mind maps (interview artefacts)

	in the interview transcript?)		sampling logic (heterogeneity)	categories of description	
Instruments^:	Q: Step 1 (a)	Q: Steps 1, 2, 3, 6	Q: Sections 1, 3 + 4		
ii. What do respondents perceive that they are learning through their involvement in GraniteNet (GN)? (ASPECT: *CONTENT*)#*	**Structure of Awareness of Learning in GN** (What is focal in awareness, thematised? (WHAT and HOW framework: *WHAT?*) + **Referential** (How are the meanings reflected in the mind maps connected to the meanings articulated in the interview transcript?)	**Referential** Meaning (nature, significance and value of what is being learned?) + **Structure of Awareness** Focal in awareness, thematised? (What is focal in awareness, thematised? (WHAT and HOW framework: *WHAT?*)	Some questions serve as stimulus material for reference during interview	Possible comparison of artefacts with categories of description	Phenomenographic analysis of: • Interview audio and transcripts • Mind maps (interview artefacts)
Instruments^:	Q: Step 1(a) + (b)	Q: Steps 1, 3, 4, 5			

RQ1: What are the qualitatively different ways that learning is perceived and experienced by GraniteNet participants and portal users?

Research Sub-Questions	Interviews		Questionnaire Data	GraniteNet Artefacts and Analytics	Data Analysis Tools and Processes
	Mind maps (artefacts)	**Transcripts (talk)**			
iii. How is learning experienced by respondents? (ASPECT: *PROCESS*)	**Structure of Awareness of Learning in GN** (what is focal in awareness, thematised? (WHAT and HOW framework: *HOW?*) + **Referential** (How are the meanings reflected in the mind maps connected to the meanings articulated in the interview transcript?)	**Referential** Meaning (experience of learning? nature of learning process? significance and value of learning? + **Structure of Awareness** (What is focal in awareness, thematised? (WHAT and HOW framework: *HOW?*)	Stimulus/Reference: **Section 1:** Participation in informal learning activities? **(Structural** and **Referential** aspects)	Used for case study description Possible correlation for Content Editors with their group(s) pages on GraniteNet portal? Possible comparison of artefacts with categories of description	Phenomenographic analysis of: • Interview audio and transcripts • Mind maps (interview artefacts)
Instruments^:	Q: Step 1(a)+ (b)	Q: Steps 1, 3, 4, 5,6	Q: Section 1		

RQ2: What are the qualitatively different ways GraniteNet participants and portal users experience using, and learning to use, ICTs?

Research Sub-Questions	Interviews		Questionnaire Data (refer attached sample)	GraniteNet Artefacts and Analytics	Data Analysis Tools and Processes (refer attached protocol)
	Mind maps (artefacts)	Transcripts (talk)			
i. How do respondents perceive and experience ICTs? (ASPECT: *CONTEXT & ENVIRONMENT + CONTENT*) ii. How do respondents experience using and learning to use ICTs? (ASPECT: PROCESS) (WHAT and HOW framework: *WHAT and HOW?)*	**Structural + Referential (possibly)** (How) Are the meanings reflected in the mind maps connected to the meanings articulated in the interview transcript?)	**Referential** Meaning (nature, significance and value of ICTs and ICT related activities, of learning to use ICTs, of their own ICT capabilities, of ICT learning barriers and affordances, possibilities) + **Structure of Awareness of ICTs/ICT tasks** (What is focal in awareness, thematised? **Structure of Awareness of their own ICT capabilities**	**Stimulus for interview questions:** **Section 3:** Q on respondent's use of GNet web portal linked to demonstration of task in Step 4 of interview and discussion about learning and teaching of task, relative task complexity etc. **Section 2:** self-rating of ICT capabilities and confidence: • Digital information literacy • Technical aspects Used as stimulus for Step 5 of interview that incorporates discussion	Possible correlation for Content Editors with their group(s) pages on GraniteNet portal? Possible comparison of artefacts with categories of description	Phenomenographic analysis of: • Interview audio and transcripts • Mind maps (interview artefacts)

		(What is focal in awareness, thematised?) **Structure of Awareness of learning to use ICTs** (What is focal in awareness, thematised?	of motivations, barriers and affordances in relation to learning to use ICTs		
Instruments^:	Q: Step 1 (a) + (b)	Q: Steps 1, 2, 3, 4, 5,6	Q: Sections 1, 2, 3 + 4		

NOTES:

Note that these aspects are differentiated for analytical purposes and are not considered to be distinct ontologically; rather, they are considered to be in a dynamic interrelationship constituting conceptions of learning in the context of GraniteNet, as shown in the study's conceptual framework in Figure 3.2 (see Booth, 2008, p. 451 on this).

^ Interview and Questionnaire questions mapped to research question(s)

Appendix K
Critical Reflection on Pilot Phase.

Situation/Reading: 1. **Validity of Interview Questions in terms of Research Questions**	Date Feb-March 2012	Project CA PhD Pilot Data Collection and Analysis
Content/events/ observations	1. How is GraniteNet perceived by its communities of interest? (CONTEXT/ENVIRONMENT) 2. What do GraniteNet participants and users perceive they are learning through their involvement in GraniteNet? (CONTENT)? 3. How is learning conceptualised and experienced by participants and users (PROCESS) 4. *What difference does IT make?* This last question was including in previous versions of the proposal and then removed. I would like to reconsider this as I believe it adds an important dimension to the study in terms of exploring how ICTs are impacting on people's experiences of participating in "la vie associative", community life, and learning in these contexts.		
Analysis	• STEP 1 (Focussing/Brainstorming) (Mind map of GraniteNet) (RQ1) • STEP 2 (Describing/Explaining) GraniteNet Scenario (RQ1) • STEP 3(a) (Recalling/reflecting/critical incident) (RQ1-RQ2) Moving from conception to experience, probing significance and value • STEP 3 (b) (Recalling significant learning experience) RQ2-RQ3 • STEP 4 (a) (Showing/demonstrating GNet knowledge/skills) (Demonstration) RQ2 – RQ3 • STEP 4(b) (Talking about, evaluating knowledge/skills) RQ2- RQ3 • STEP 5 (Responding, imagining, creating) Response to Artefact (RQ2,3)		
	• Need to explore in greater depth the CONTENT and PROCESS of learning (and facilitating learning) in the context of the community technology project (that is community information/digital literacy learning), including:		

	• How do people recognise their own knowledge and skills deficiencies? • What motivates them to learn?
Impact/significance	VERY HIGH Interview questions are valid in terms of addressing research questions. The question is, how useful are the research questions in terms of the purpose of and rationale for the study without RQ 4?
Forward action	• Add mind map of Learning in GraniteNet to Step 1 (b) • Step 4 of Interview Protocol revised to incorporate stronger focus on demonstration and explanation of GNet digital literacy skills with reference to respondents' ratings of their own skills and confidence in Questionnaire. • Include questions that specifically probe how and why they rated themselves the way they did for each skill area in the Questionnaire as well as how they recognise their own skills and knowledge deficiencies and what motivates them to want to improve their skills and to take action to do so. • Reintroduce RQ4?

Appendix L
Ethics approval and procedures.

USQ
AUSTRALIA

University of Southern Queensland

The University of Southern Queensland

Participant Information Sheet

HREC Approval Number: H11REA189

An Inquiry into Learning in Community Informatics: Understanding, Facilitating and Accounting for Learning in the GraniteNet Project

Principal Researcher: Catherine Arden

Other Researcher(s): N/A

I would like to invite you to take part in this research project. *For more information about the research project, please refer to the attached "USQ-GraniteNet Research Project Information Sheet"*

1.   Procedures

Participation in this project will involve

1. Completion of a short, two page confidential questionnaire (paper based), followed by
2. Participation in a 45-60 minute confidential, individual, audiotaped interview with the Principal Researcher
3. (Possible) participation in a 30 minute follow-up interview with the Principal Researcher.

Information collected will be securely stored and confidentiality maintained. As the Principal and sole researcher, Catherine will be the only person who will have access to the personal information you are asked to provide in the questionnaire and this information will be kept confidential and secure at all times in a locked filing cabinet at USQ and on a password-protected computer, separate from any other input provided, and disposed of on completion of the study in accordance with Information Privacy Principles.

Individual interviews will be conducted in full privacy and audiotaped with your permission. Audio recordings will also be securely stored on in a locked filing cabinet and/or as audio files on a password-protected computer accessible only to the researcher. Audiotapes of interviews may be made available to a qualified and approved Research Assistant employed for the specific purpose of transcription under the supervision of the Principal Researcher. To protect the identity of interviewees, any Research Assistant undertaking the transcriptions will have no access to identifying information about respondents and will have no personal involvement in the GraniteNet project. Audiotapes and transcripts of interviews will be securely stored separately from any personal information and disposed of after period of five years or returned to the interviewee.

The data collected during the study will be used only for the purpose of achieving the stated research objectives, reporting the processes and outcomes of the research in Catherine's doctoral thesis, sharing findings with the broader research community through publications and conference presentations, and making recommendations to the GraniteNet Board to inform the ongoing design, development and management of GraniteNet. The researcher undertakes to maintain the utmost levels of privacy and confidentiality of respondents' data at all times so that it cannot be identified, including in any informal and formal summaries, reports and publications. A copy of the final report will be presented to the GraniteNet Board and made available to research participants via the GraniteNet website.

Although it is not anticipated that participation in this research will place you at any risk, you may well perceive it to be an inconvenience and/or feel obliged to participate when you do not wish to do so - please see the information in the following section about Voluntary Participation in relation to this issue.

The research has received approval from the University's Human Research Ethics Committee, who also monitors the research to ensure its adherence to the principles of ethical research involving humans. If you have any concerns about the conduct of the research, please contact the Ethics and Research Integrity Officer using the contact details provided on the following page.

2.   Voluntary Participation

Participation is entirely voluntary. **If you do not wish to take part you are not obliged to.** If you decide to take part and later change your mind, you are free to withdraw from the project at any stage. Any personal information already obtained from you will be destroyed. Having said this, it is possible that should you choose to withdraw from the study during the course of the research that de-identified data that has already been incorporated into phenomenographical analysis will not be able to be differentiated for removal from the study.

Your decision whether to take part or not to take part, or to take part and then withdraw, will not affect your *relationship with* the University of Southern Queensland and/or GraniteNet.

Please notify the researcher via the contact details provided below if you decide to withdraw from this project.

Should you have any queries regarding the progress or conduct of this research, you can contact the principal researcher:

Catherine Arden
Faculty of Education
University of Southern Queensland
TOOWOOMBA QLD 4350

PH: (07) 4631 2333
AH: (07) 4631 1590
MOBILE: 0409766886

If you have any ethical concerns with how the research is being conducted or any queries about your rights as a participant please feel free to contact the University of Southern Queensland Ethics Officer on the following details.

Ethics and Research Integrity Officer
Office of Research and Higher Degrees
University of Southern Queensland
West Street, Toowoomba 4350
Ph: +61 7 4631 2690
Email: *ethics@usq.edu.au*

USQ
University of Southern Queensland

The University of Southern Queensland

Consent Form

HREC Approval Number: **H11REA189**

TO: Research participants

Full Project Title: **An Inquiry into Learning in Community Informatics: Understanding, Facilitating and Accounting for Learning in the GraniteNet Project**

Principal Researcher: Catherine Arden

- I have read the Participant Information Sheet and the nature and purpose of the research project has been explained to me. I understand and agree to take part.

- I understand the purpose of the research project and my involvement in it.

- I understand that I may withdraw from the research project at any stage and that this will not affect my status now or in the future.

- I confirm that I am over 18 years of age.

- I understand that I will be audio taped during the study. I understand that audio recordings will also be securely stored on in a locked filing cabinet and/or as audio files on a password-protected computer accessible only to the researcher and that audiotapes and transcripts of interviews will be securely stored separately from any personal information and disposed of after period of five years or returned to the interviewee

- I understand that personal and other information and artefacts obtained during interview and in the questionnaire administered during the study will be kept confidential, anonymised and securely stored in a locked filing cabinet and on a password-protected computer separate from any identifying information, available only to the researcher.

- I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential

Name of participant..

Signed..**Date**............................

If you have any ethical concerns with how the research is being conducted or any queries about your rights as a participant please feel free to contact the University of Southern Queensland Ethics Officer on the following details.

Ethics and Research Integrity Officer
Office of Research and Higher Degrees
University of Southern Queensland
West Street, Toowoomba 4350
Ph: +61 7 4631 2690
Email: *ethics@usq.edu.au*

USQ | University of Southern Queensland

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OFFICE OF RESEARCH AND HIGHER DEGREES
Helen Phillips
Ethics Officer
PHONE (07) 4631 2690 | FAX (07) 4631 1995
EMAIL ethics@usq.edu.au

Wednesday, 7 December 2011

Ms Catherine Arden
PO BOX 405
Stanthorpe QLD 4380

Dear Ms Arden

The Chair of the USQ Fast Track Human Research Ethics Committee (FTHREC) recently reviewed your responses to the FTHREC's conditions placed upon the ethical approval for the below project. Your proposal now meets the requirements of the *National Statement on Ethical Conduct in Human Research (2007)* and full ethics approval has been granted.

Project Title	An Inquiry into Learning in Community Informatics: Understanding, Facilitating and Accounting for Learning in the GraniteNet Project
Approval no.	H11REA189
Start Date	01/12/2011
Expiry date	30/06/2012
FTHREC Decision	Approved

The standard conditions of this approval are:

   (a) conduct the project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments made to the proposal required by the HREC
   (b) advise (email: ethics@usq.edu.au) immediately of any complaints or other issues in relation to the project which may warrant review of the ethical approval of the project
   (c) make submission for approval of amendments to the approved project before implementing such changes
   (d) provide a 'progress report' for every year of approval
   (e) provide a 'final report' when the project is complete
   (f) advise in writing if the project has been discontinued.

For (c) to (e) forms are available on the USQ ethics website: http://www.usq.edu.au/research/ethicsbio/human

Please note that failure to comply with the conditions of approval and the *National Statement (2007)* may result in withdrawal of approval for the project.

You may now commence your project. I wish you all the best for the conduct of the project.

Helen Phillips
Ethics Officer
Office of Research and Higher Degrees

Appendix M
Pilot Questionnaire

GraniteNet Research Project DRAFT Questionnaire

Section 1: About You

Gender	☐ Male ☐ Female		Postcode	
Year of birth			Length of time resident in Stanthorpe area	

Approximate Annual Income (this question is **optional** but your response will help us to be able to make comparisons between our results and other population statistics)	☐ Nil income ☐ $1 - $8,999 ☐ $9,000 – $12,999 ☐ $13,000 - $19,999 ☐ $20,000 - $30,000 ☐ $31,000 - $40,000 ☐ $41,000 - $50,000 ☐ $51,000 - $60,000 ☐ $61,000 - $70,000 ☐ $71,000 - $80,000 ☐ $80,000 or over	Current Employment Status (tick all that apply to you currently – that is, at the time you are completing this form)	☐ Home Duties ☐ Casual employment ☐ Permanent part-time ☐ Permanent full-time ☐ Self-employed ☐ Primary producer ☐ Carer ☐ Retired ☐ Jobseeker ☐ Other (please specify)

Languages other than English spoken at home? (please state which)		Aboriginal or Islander descent?	☐ YES ☐ NO
Highest level of formal education completed/highest qualification?		Do you have a significant disability?	☐ YES ☐ NO
Are you currently undertaking a formal course of study?	☐ YES ☐ NO	If YES, please specify name of course, institution and mode of study	
Are you currently participating in informal learning activities?	☐ YES ☐ NO	If YES, please specify learning activity/activities	

Section 2: Computers and You

How many working computers do you have in your household?	☐ None ☐ One ☐ Two ☐ More than two ☐ Lap-top computer	What kind of internet access do you have at home?	☐ None ☐ Dial up (phone line) ☐ Wireless broadband ☐ Broadband ☐ Satellite
Do you currently use any mobile digital technologies? If so, please list here			
Frequency of computer use?	☐ much/most of the day ☐ once a day ☐ once a week on average	☐ more than once daily ☐ every couple of days ☐ rarely ☐ never	
Main use/s of home personal computer? (please tick all that apply to you)	☐ children – recreational, leisure ☐ children – educational use ☐ my own recreational use ☐ my own formal educational use ☐ my own informal learning use ☐ my own business use ☐ my own political activity	☐ my own communication (personal) ☐ my own communication (business) ☐ my own community/voluntary work ☐ my own general information ☐ other (please specify):	
Main use/s of mobile digital technologies?	please specify:		

Section 2: Computers and You (cont.)

On a scale of 1-5, how would you rate your **literacy skills**? (reading and writing skills)	Low 1	2	3	4	5	High
On a scale of 1-5, how would you rate your **technical computer skills**? (using and managing hardware and software; solving basic technical problems; managing internet security)	Low 1	2	3	4	5	High
On a scale of 1-5, how would you rate your **digital information literacy** skills?	Low 1	2	3	4	5	High
On a scale of 1-5, how would you rate your **confidence in using computers and the internet**? (using the computer for information searching, sourcing and sharing with others)	Low 1	2	3	4	5	High

Section 3: GraniteNet and You

How long have you been involved with GraniteNet? **What is/was your role?** (tick all roles that you currently have or have had in the past)	☐ less than six months ☐ 6 months to one year ☐ about one year ☐ about two years ☐ about three years ☐ more than three years ☐ since it started	☐ Board Member ☐ Volunteer (computer training) ☐ Volunteer (technical) ☐ Volunteer (administrative) ☐ Paid project team member ☐ Blogger ☐ GraniteNet website user ☐ Content Editor (community group)[1] ☐ Senior's Kiosk customer ☐ Business Sponsor ☐ Customer/client (other – please specify): ☐ other activity (please specify):
How many hours a week, on average, do you devote to your above involvement in GraniteNet?		How much of this time is involved in activity that is on site (Hilton Street) and how much off-site (conducted from home or elsewhere)? ☐ % on site ☐ % off site
How frequently do you visit the GraniteNet premises?	☐ every day ☐ every couple of days ☐ once a week on average	☐ fortnightly ☐ monthly ☐ rarely ☐ never
How often do you use the GraniteNet website?	☐ frequently each day ☐ every couple of days ☐ once or twice a month	☐ once or twice a day ☐ once or twice a week ☐ rarely ☐ never
What do <u>you</u> use the GraniteNet website for?		

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[1] If you are a GraniteNet Content Editor for one or more community groups, please complete Section 4 on the following page

Section 4: GraniteNet, You and Your Community Group

Community Group Details and Use of GraniteNet **How many community groups are directly linked to your involvement in GraniteNet?** (please complete these details for each group you are involved with in order of highest level of involvement in/ use of GraniteNet – please continue overleaf...)	Name of Group 1:	Approximate number of members:
	Purpose/Mission of group:	Nature of main group activities:
	Main age group/s of members/target group:	Estimated number of group members using GraniteNet (in addition to you)?
	Your role/s in the group:	What does the group use GraniteNet for?
	How does GraniteNet benefit your group?	
	Which features or aspects of GraniteNet are of most benefit to the group?	
	How could GraniteNet be of more benefit to your group?	
Community Group Details and Use of GraniteNet **How many community groups are directly linked to your involvement in GraniteNet?** (please complete these details for each group you are involved with in order of highest level of involvement in/use of GraniteNet – please continue overleaf...)	Name of Group 2:	Approximate number of members:
	Purpose/Mission of group:	Nature of main group activities:
	Main age group/s of members/target group:	Estimated number of group members using GraniteNet (in addition to you)?
	Your role/s in the group:	What does the group use GraniteNet for?
	How does GraniteNet benefit your group?	
	Which features or aspects of GraniteNet are of most benefit to the group?	
	How could GraniteNet be of more benefit to your group?	

Community Group Details and Use of GraniteNet	Name of Group 3:	Approximate number of members:
How many community groups are directly linked to your involvement in GraniteNet?	Purpose/Mission of group:	Nature of main group activities:
(please complete these details for each group you are involved with in order of highest level of involvement in/use of GraniteNet – please continue overleaf…)	Main age group/s of members/target group:	Estimated number of group members using GraniteNet (in addition to you)?
	Your role/s in the group:	What does the group use GraniteNet for?
	How does GraniteNet benefit your group?	
	Which features or aspects of GraniteNet are of most benefit to the group?	
	How could GraniteNet be of more benefit to your group?	

Community Group Details and Use of GraniteNet	Name of Group 4:	Approximate number of members:
How many community groups are directly linked to your involvement in GraniteNet?	Purpose/Mission of group:	Nature of main group activities:
(please complete these details for each group you are involved with in order of highest level of involvement in/use of GraniteNet – please continue overleaf…)	Main age group/s of members/target group:	Estimated number of group members using GraniteNet (in addition to you)?
	Your role/s in the group:	What does the group use GraniteNet for?
	How does GraniteNet benefit your group?	
	Which features or aspects of GraniteNet are of most benefit to the group?	
	How could GraniteNet be of more benefit to your group?	

Appendix N
Revised Questionnaire

Appendix 4.6 GraniteNet Research Project Questionnaire

Section 1: About You

Gender	☐ Male ☐ Female	Postcode	
Year of birth		Length of time resident in Stanthorpe area	

Approximate Annual Income (this question is **optional** but your response will help us to be able to make comparisons between our results and other population statistics)	☐ Nil income ☐ $1 - $8,999 ☐ $9,000 – $12,999 ☐ $13,000 - $19,999 ☐ $20,000 - $30,000 ☐ $31,000 - $40,000 ☐ $41,000 - $50,000 ☐ $51,000 - $60,000 ☐ $61,000 - $70,000 ☐ $71,000 - $80,000 ☐ $80,000 or over	Current Employment Status (tick all that apply to you currently – that is, at the time you are completing this form)	☐ Home Duties ☐ Casual employment ☐ Permanent part-time ☐ Permanent full-time ☐ Self-employed ☐ Primary producer ☐ Carer ☐ Retired ☐ Jobseeker ☐ Other (please specify)
Languages other than English spoken at home? (please state which)		Aboriginal or Islander descent?	☐ YES ☐ NO
Highest level of formal education completed/highest qualification?		Do you have a significant disability?	☐ YES ☐ NO
Are you currently undertaking a formal course of study?	☐ YES ☐ NO	If YES, please specify name of course, institution and mode of study	
Are you currently participating in informal learning activities?	☐ YES ☐ NO	If YES, please specify learning activity/activities	

Section 2: Computers and You

How many working computers do you have in your household?	☐ None ☐ One ☐ Two ☐ More than two ☐ Lap-top computer	What kind of internet access do you have at home?	☐ None ☐ Dial up (phone line) ☐ Wireless broadband ☐ Broadband ☐ Satellite
Do you currently use any mobile digital technologies? If so, please list here			
Frequency of computer use?	☐ much/most of the day ☐ once a day ☐ once a week on average	☐ more than once daily ☐ every couple of days ☐ rarely ☐ never	
Main use/s of home personal computer? (please tick all that apply to you)	☐ children – recreational, leisure ☐ children – educational use ☐ my own recreational use ☐ my own formal educational use ☐ my own informal learning use ☐ my own business use ☐ my own political activity	☐ my own communication (personal) ☐ my own communication (business) ☐ my own community/voluntary work ☐ my own general information ☐ other (please specify):	
Main use/s of mobile digital technologies?	please specify:		

Section 2: Computers and You (cont)

On a scale of 1-5, how would you rate your **literacy skills**? (reading and writing skills)	Low 1	2	3	4	5 High
On a scale of 1-5, how would you rate your **technical computer skills**? (using and managing hardware and software; solving basic technical problems; managing internet security)	Low 1	2	3	4	5 High
On a scale of 1-5, how would you rate your **digital information literacy** skills? (using computers and the internet for searching, sourcing, creating, managing and sharing information with others)	Low 1	2	3	4	5 High
On a scale of 1-5, how would you rate your **confidence in using computers and the internet**?	Low 1	2	3	4	5 High

Section 3: GraniteNet and You

How long have you been involved with GraniteNet? **What is/was your role?** (tick all roles that you currently have or have had in the past)	☐ less than six months ☐ 6 months to one year ☐ about one year ☐ about two years ☐ about three years ☐ more than three years ☐ since it started	☐ Board Member ☐ Volunteer (computer training) ☐ Volunteer (technical) ☐ Volunteer (administrative) ☐ Paid project team member ☐ Blogger ☐ GraniteNet website user ☐ Content Editor (community group)[1] ☐ Senior's Kiosk customer ☐ Business Sponsor ☐ Customer/client (other – please specify): ☐ other activity (please specify):
How many hours a week, on average, do you devote to your above involvement in GraniteNet?		How much of this time is involved in activity that is on site (Hilton Street) and how much off-site (conducted from home or elsewhere)? ☐ % on site ☐ % off site
How frequently do you visit the GraniteNet premises?	☐ every day ☐ every couple of days ☐ once a week on average	☐ fortnightly ☐ monthly ☐ rarely ☐ never
How often do you use the GraniteNet website?	☐ frequently each day ☐ every couple of days ☐ once or twice a month	☐ once or twice a day ☐ once or twice a week ☐ rarely ☐ never
What do <u>you</u> use the GraniteNet website for?		

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[1] If you are a GraniteNet Content Editor for one or more community groups, please complete Section 4 on the following page

Section 4: GraniteNet, You and Your Community Group

Community Group Details and Use of GraniteNet How many community groups are directly linked to your involvement in GraniteNet? (please complete these details for each group you are involved with in order of highest level of involvement in/ use of GraniteNet – please continue overleaf...)	Name of Group 1:	Approximate number of members:
	Purpose/Mission of group:	Nature of main group activities:
	Main agegroup/s of members/target group:	Estimated number of group members using GraniteNet (in addition to you)?
	Your role/s in the group:	What does the group use GraniteNet for?
	How does GraniteNet benefit your group?	
	Which features or aspects of GraniteNet are of most benefit to the group?	
	How could GraniteNet be of more benefit to your group?	
Community Group Details and Use of GraniteNet How many community groups are directly linked to your involvement in GraniteNet? (please complete these details for each group you are involved with in order of highest level of involvement in/use of GraniteNet – please continue overleaf...)	Name of Group 2:	Approximate number of members:
	Purpose/Mission of group:	Nature of main group activities:
	Main agegroup/s of members/target group:	Estimated number of group members using GraniteNet (in addition to you)?
	Your role/s in the group:	What does the group use GraniteNet for?
	How does GraniteNet benefit your group?	
	Which features or aspects of GraniteNet are of most benefit to the group?	

	How could GraniteNet be of more benefit to your group?	
Community Group Details and Use of GraniteNet **How many community groups are directly linked to your involvement in GraniteNet?** (please complete these details for each group you are involved with in order of highest level of involvement in/use of GraniteNet – please continue overleaf…)	Name of Group 3:	Approximate number of members:
	Purpose/Mission of group:	Nature of main group activities:
	Main agegroup/s of members/target group:	Estimated number of group members using GraniteNet (in addition to you)?
	Your role/s in the group:	What does the group use GraniteNet for?
	How does GraniteNet benefit your group?	
	Which features or aspects of GraniteNet are of most benefit to the group?	
	How could GraniteNet be of more benefit to your group?	
Community Group Details and Use of GraniteNet **How many community groups are directly linked to your involvement in GraniteNet?** (please complete these details for each group you are involved with in order of highest level of involvement in/use of GraniteNet – please continue overleaf…)	Name of Group 4:	Approximate number of members:
	Purpose/Mission of group:	Nature of main group activities:
	Main agegroup/s of members/target group:	Estimated number of group members using GraniteNet (in addition to you)?
	Your role/s in the group:	What does the group use GraniteNet for?
	How does GraniteNet benefit your group?	
	Which features or aspects of GraniteNet are of most benefit to the group?	

Appendix O
Pilot Interview

Attachment A: Draft Interview Protocol and Questions

Setting Up:

- Face-to-face, individual audio recorded interview of 1 hour's duration (approximately) – have digital voice recorder charged and ready to go
- Respondent to have already completed the questionnaire which they will bring with them to the interview – leave on table for reference
- Consent forms signed
- Interview to be conducted in private with access to table, chairs, computer with internet access showing GraniteNet home page, copy of Evaluation Report for artefacts (Vision Statement, Triangle Diagram, Computers and Imagination Go Together), different coloured pens and A3 and A4 paper for drawing.

Intro (2-3 mins): Explain purpose of interview, duration etc., ensure respondent is happy to proceed with recording etc. etc.

- **Purpose:** to explore your perceptions and experiences of GraniteNet using a series of five tasks and prompts to get you thinking about GraniteNet, focussed in on different aspects, and imagining different scenarios involving GraniteNet.
- There are no right or wrong answers to questions

Step 1 - Mind map (5-7 mins) (*Focussing, Brainstorming*): Provide paper and pens and ask respondent to draw a 'top of head' "mind map" of GraniteNet (this is a quick activity I have done with students in my courses previously and it works really well as a focussed brainstorming exercise and is easy to do - will show you when we meet). Whilst they are doing this I will read through their responses to the questionnaire. When they have finished I will ask them to talk me through their mind map.

Have you ever heard of mind mapping or concept mapping? Mind mapping is a technique used for brainstorming and generating lots of ideas and associations about a particular topic. (Demonstrate mind mapping technique using the word 'love' or 'pets', then ask the person to draw a mind map of GraniteNet)

Step 2: Scenario (10 minutes) (*Describing/explaining*): Imagine you're at the Stanthorpe Show in the large pavilion and you've being asked to look after the GraniteNet stand whilst the person in charge ducked out for half an hour to get some lunch. During that time someone comes up to the stand and asks "What's GraniteNet all about?" How would you describe GraniteNet to that person? (try to get the person to elaborate as much as possible on their description by role-playing the 'customer' who is asking the questions)

Step 3: Demonstration (10 minutes*) (showing/demonstrating knowledge/skills*):** Refer to Questionnaire question: "What do you use GraniteNet for?" Ask respondent to show me how they do whatever it is they do (e.g. upload their group's content or check on the community noticeboard or whatever it is that they have said they use GraniteNet for, specifically). "Can you show me now how you do X?" "How did you learn how to do this?" "How do you remember how to do this?" "Why do you do this [task] in that particular way?" "How would you go about showing someone else how to do this?" "Why?"

Step 4: Anecdote (10 minutes) *(recalling/critical incident/reflecting)*: Referring back to the mind map - think about your own involvement/experience with Granitenet and choose one 'branch' of your mind map that has particular significance/importance for you, or that puts you in mind of a particular incident or experience of GraniteNet....Tell me about that experience or incident and why you see it as being important...

(See if this leads into a *learning related experience* and if so, follow it...) If not, prompt as follows: "Can you remember a particular occasion in your experience of GraniteNet when you learned something new - something that you didn't know before? Something that you see as being of value? Can you describe this even to me now? What it was you learned? Why it was significant? How it affected you at the time, and how it affects you now? What do you actually mean when you talk about 'learning' in this situation?

Step 5: Responding to Artefacts (10 minutes) *(responding, imagining, creating)*: I'm now going to present you with three GraniteNet 'artefacts' and seek your responses to each.

(i) Refer GraniteNet Vision Statement: A community designed, owned and managed web portal that will support Stanthorpe's development as a learning community (Q: What do you think of when you read this...?)

(ii) Triangle Diagram (Q: Can you imagine what "My learning space" might be? Use Y chart - look like/sound like/feel like)

(iii) Poster "Computers and imagination go together..." Can you indicate on this scale how you feel about this statement:

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	2	3	4	5

Can you please explain your response?

Appendix P
Revised Interview Procedure.

Step 1: Introduction (5 minutes): Purpose of interview and interview process explained, consent form and completed questionnaire collected, privacy of interview location assured, permission for audio-recording verified and materials an A4 sheets of blank paper, a variety of pens and pencils, recording equipment and computer connected to the internet, set up and checked.

Step 2a Mind mapping of GraniteNet (5 minutes): *(Focusing, brainstorming)*: As the first step in the interview procedure, respondents were asked if they were familiar with mind mapping and, if not, the interviewer drew a sample mind map using the word 'Pets' as the focus (refer sample mind maps used in the interviews). The interviewee was then provided with a blank sheet of A4 paper and a variety of pens and pencils and asked to draw a mind map of GraniteNet. To start the mind mapping process off, the interviewer would draw a circle in the centre of the blank page and write the word "GraniteNet" in the circle. At this point, the researcher was mindful not to provide any further information that might lead the respondent in a particular direction of thought, and typically, would indicate that the respondent should map whatever came to mind, and that there were no right or wrong answers. While the respondent was drawing his/her Mind Map, the interviewer scanned the responses on the respondent's completed questionnaire, noting responses to particular questions that would be followed up at a later stage in the interview. Once the respondent had completed the Mind Map, he/she was then asked to explain, "Talk me through" their Mind Map, elaborating on each of their "branches". In this way, the researcher aimed to discover respondents' conceptions and experiences of GraniteNet, specifically addressing the *context and environment* aspect of the study's conceptual framework, linked to research question 1 (RQ1).At this point, the researcher asked questions for clarification as required to aid interpretation of the Mind Map.

Step 2b Mind mapping of "Learning in GraniteNet" (5 minutes): *(Focusing, brainstorming)*: Respondents were then asked to draw a second mind map on the reverse of the page, this time responding to the words "learning in GraniteNet" at the centre [written by the researcher], and subsequently asked to talk through each component of the second mind map, thereby interrogating the *content, process* and *context and environment* aspects of the conceptual framework for RQ1 and RQ2[187]. As was the case with the first mind map, the researcher was careful to avoid providing any information to the respondent that might lead them in a particular direction with their thinking, and therefore avoided answering questions about what might be required, how the term "learning" should be interpreted, and so on. The respondent was then asked to talk through their Mind Map and the researcher asked questions for clarification as required. The mind maps were later subject to phenomenographic analysis and contributed to discovery of respondents' conceptions of the phenomena in question with specific reference to the structure of awareness by clearly

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[187]   This step was added after the review and critical reflection on the pilot phase interviews as a device to probe respondents' concepts and experiences of learning in GraniteNet without using direct questioning or extensive verbal prompts. The challenges for researchers of obtaining good data about how respondents perceive and experience informal learning was discussed in Chapter 2.

showing what is "thematised", and "focal in awareness" (Richardson, 1999, p. 56) for each respondent prior to their engagement in the rest of the interview process.

Step 3 GraniteNet Scenario (3-5 minutes) *(Imagining, describing, explaining)***:** The respondent was then asked to imagine themselves in a particular scenario whereby they were required to describe and explain GraniteNet to an unknown newcomer to the town [the actual scenario was provided by the researcher and the same scenario was provided to each respondent]. This step builds on Step 1, addressing the *context and environment* aspect of the conceptual framework related to RQ1, but places the respondent in a situation where they need to communicate their knowledge, understandings and perceptions of what they see as the important features and functions of GraniteNet, again providing an indication of the structure of respondents' awareness of GraniteNet based on their own knowledge and experience.

Step4 Anecdote/Critical incident [188]**(10 minutes):** *(Recalling, reflecting, analysing, interpreting).* At this point, the researcher directs the respondent's attention back to their mind maps and also to their response on the questionnaire to the question about how long they have been involved with GraniteNet, and asks him/her if they can think of a particular moment, experience, event or incident that they remember as being particularly significant (memorable, important) for them for some reason. The researcher asks the respondent*:* "Tell me about that experience or incident…Why is it important to you? "If the critical incident related does not explicitly reference the respondent's personal learning, the researcher then prompts the respondent to think about a similarly significant learning-related incident using the following prompts: "Can you recall a particular occasion in your experience of GraniteNet when you learned something new—something that you didn't know before, something that you see as being of value to you personally? Can you describe this to me? What it was that you learned? Why it was significant? How it affected you at the time, and how it affects you now?" These questions are specifically designed to probe the *content* aspect of the conceptual framework (linked to RQ1 and RQ2), but also illuminate aspects of *process* and *context and environment*, linked to RQ1.

Step 5: Reviewing Questionnaire Responses on Informal Learning and Digital Literacy (10 mins): (*Reflecting, analysing, evaluating, interpreting, and explaining).* The researcher then directs the respondent's attention to their responses to two of the questions in the questionnaire(refer Appendices L and M the first of which asks respondents whether or not they are currently participating in "informal learning activities"[189]and asked to explain their response (or lack thereof) to the question. This contributed to RQ1, probing respondents' conceptions of learning. Following this, the researcher directed the respondent's attention to Section 2 of the questionnaire, where they had been asked to rate their own capabilities in four aspects of digital literacy on a scale of one to five, asking them to explain how they came to rate themselves as they did (for example, on what basis? Using what criteria and benchmarks? etc) in each case. These responses would contribute

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[188]   Stark and Torrance recommend asking respondents in a case study "to identify and reflect on a critical incident in their work or situation" to generate key examples of what respondents see as being important issues (2005, p. 35).

[189]   It had become apparent during the pilot study that this question was problematic, in that some respondents might have difficulty with interpretation. After reflection on the pilot interviews, the researcher decided to retain the question but use it as stimulus for an exploration of respondents' understandings of what constitutes "learning" in the context of everyday activities, thus contributing to interrogating their conceptions of learning.

to analysis of the digital literacy learning aspect (CONTENT) of the conceptual framework, focusing specifically on RQ2. (This step was also added after the review and critical reflection on the pilot phase interviews).

Step 6 Demonstration (7-10 mins): (*Concrete experience, recalling, demonstrating, and explaining*). Referring to a question in Section 3 of the questionnaire asking respondents what they use the GraniteNet website for, respondents were provided with access to a computer connected to the internet and linked to the GraniteNet website and were asked to show the researcher an example of an activity or task that they routinely undertook, related to their use of the GraniteNet website or their participation in other activities related to their involvement with GraniteNet. The researcher observed the respondent and probed further as appropriate using the following prompts: "Can you show me how you do x? How did you learn how to do this? How do you remember how to do this? Why do you do this task in this particular way? How would you go about showing someone else how to do this? Why?" These questions are typical of questions asked in phenomenographic interviews designed to identify respondents' conceptions of learning related to a particular content domain (Marton & Booth, 1997) and contribute to an investigation of the digital literacy related aspect (*CONTENT*) of the conceptual framework, again focussing specifically on RQ2.

Step 7 Responding to Artefacts (5 mins): *(Responding, imagining, creating).* As the final step in the interview, respondents were presented with an artefact from Phase 2 of the GraniteNet PAR project (refer Figure 4.6 in Chapter 4), which illustrates a conceptual framework for the original GraniteNet community web portal comprised of three components: a "community noticeboard", a "community marketplace" and a "my learning space" component[190]. Respondents were then asked if they were able to recognise any of these components in their current experience of GraniteNet. If not addressed in their initial response, respondents were then specifically asked for their response to the "my learning space" component. "Does this say anything to you? Does this have any meaning for you in relation to GraniteNet? What do you think this might mean? What could 'my learning space' in GraniteNet be referring to? If I asked you to imagine what 'my learning space' in relation to GraniteNet could be, what would you say? How would you describe it? Who, and what would it be for")?This question was designed to probe an aspect of people's conceptions and experiences of digital technologies that asked them to imagine the possibilities digital technologies such as GraniteNet (might) afford for learning, addressing both RQ1 and RQ2.

Step 8: Conclusion (2 minutes): To conclude the interviews, participants were asked if they would like to make any further comments or ask any questions, and were thanked for their time. Follow-up with respondents post-interview to obtain feedback on the process was not part of the study, and, consistent with common practice in phenomenographic research (Akerlind, 2002) no member-checking or validation of the transcripts with respondents undertaken.

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[190]   Note that in the original interview protocol used in the pilot study, a series of four GraniteNet artefacts was used, however this was reduced to one for the Phase 2 interviews as a result of the critical reflection on the interview protocol in the pilot study.

Appendix Q
Data Analysis Template

Learning Context and Environment (GraniteNet)	Content Learned in Context: (a) ICT related and (b) Other	Process - Experience of Learning in Context (a) ICT related (b) other?
Analysis of interview transcript and artefacts – key associations and utterances (meaning and awareness)	*Analysis of interview transcript and artefacts – key associations and utterances (meaning and awareness)*	*Analysis of interview transcript and artefacts – key associations and utterances (meaning and awareness)*
Mind Map of GN? **Keywords:**	**Mind Map of Learning in GN?** **Keywords:**	**Mind Map of Learning in GN?** **Keywords:**
What does this tell me about how the respondent sees/experiences GraniteNet? What does this tell me about how the respondent sees the significance and value of GraniteNet?	*What does this tell me about the way the respondent sees/experiences/understands what they are learning? What does this tell me about how the respondent sees the significance and value of the content being learned?*	*What does this tell me about the way the respondent sees/experiences/understands "learning"? What does this tell me about how the respondent sees the process of learning, mechanism/s of learning, barriers and affordances etc? Possibilities for learning in GraniteNet?*
What must GraniteNet mean to the respondent if they are saying this? What is their structure of awareness of GraniteNet?	*What must the content learned mean to the respondent if they are saying this? Significance and value of ICTs? Structure of Awareness?*	*What must learning (and 'teaching') mean to the respondent if they are saying this? Structure of Awareness?*
Metaphor:	**Metaphor:**	**Metaphor:**

Appendix R
Emergence of conceptions of learning and categories of description during the data analysis process.

Data Analysis Steps	Objective (and important considerations)	Discovery of conceptions and emergence of categories of description
1. Initial inspection of interview transcripts	• Identify utterances relevant to the different learning aspects in the conceptual and analytical framework (highlight and colour-code for ease of reference)	Steps 1-9 completed with pilot dataset and then again with full dataset
2. Further consideration of identified utterances in the context of the whole transcript, focusing on referential component	• Immersion in the "second order perspective": • What does this tell me about the way the respondent sees/experiences the phenomenon in question? • What must the phenomenon mean to the respondent if they are saying this or that? (record in data analysis template)	Discovery of conceptions in the data: Initial Focus on **referential component** (meanings reflected in the data): • Conception of GraniteNet? • Conception of learning content? • Experience of learning process? • Conception of digital technologies? What are the differences in meanings reflected in the data? Which metaphors are used by respondents?
3. Further inspection of interview transcripts and identified utterances with a focus on structural components	• Identify what is thematised, focal in awareness, and what is unthematised, or in the ground. • How is the phenomenon in question differentiated/delimited from its context? (record in relevant section of data analysis template)	
4. Checking and validating interpretations of conceptions against respondents' mind maps	• Review content of each mind map in light of transcript and note the sequence (numbered order) in which each of the associations reflected in the branches of the mind map are mentioned by the respondent (annotate on mind map); note important keywords used by respondents in their description of their mind map branches (annotate on mind map)	Focus on **structure of awareness**: • What is thematised, focal in awareness in each case? • What are the structural aspects differentiating conceptions?
5. Working with hard copies of the interview transcripts and with reference to the data analysis templates, physically sort data extracts into "pools of meaning" (Marton, 1988, p. 198) 6. Gradual refinement of a "stabilized system of meanings" into structurally related categories (tentative categories of description)	• Move backwards and forwards between individual transcripts and pools of meaning • Start moving away from a focus on individuals to a focus on conceptions • Start identifying critical differences between conceptions and possible dimensions of variation • Continue iterative process as required	Identify **dimensions of variation** differentiating conceptions – start identifying "critical differences" with reference to dominant metaphors, key learning questions, and learning thresholds; identify object of activity (noesis); object of learning; etc; etc;
7. Checking (validating) identified categories against individual transcripts	• Do the categories make sense in the context of the individual transcripts?	**Gradual emergence of categories and groupings**
8. Devising labels and descriptions for each category	• Use metaphors and utterances drawn from the interview transcripts where possible • Labels need to reflect the meaning of the category in terms of the referential component of the conception reflected in the category	Gradual consolidation of a set of dimensions of variation and critical differences differentiating categories
9. Construction and refinement of the outcome space in diagrammatic form showing structural relationships among categories of description in terms of expanding awareness of the phenomenon in question	• Review outcome space against Marton & Booth's (1997) criteria: distinctiveness, logical and inclusive relationships and parsimony	Consolidation and naming of categories and groupings Gradual construction and consolidation of the outcome space Finalisation of categories and refinement of the outcome space
10. Mapping conceptions in the outcome space back to the case study sample	• Check that the combination of conceptions of the phenomena reflected in the categories in terms of their occurrence and spread across the respondent sample makes sense.	Final validation of the outcome space

Appendix S
Advance organiser for unpacking conceptions of learning in each category in the outcome space.

Title of category = overall *meaning* of conception ⟹	**Category Title (for Categories 1-7)**
First level: Holistic conception of learning in GraniteNet ⟹	**Overview and distinguishing characteristics of the category** (Learning frontier, dominant learning metaphors, key learning questions)
• Includes *meaning (referential)* and *structure of awareness*	Conception of GraniteNet (as learning **context** and **environment**) ⟺ Conception of Learning in GraniteNet **(holistic)**
	Supporting quotations and/or mind maps
Second level: Conception and Experience of Learning in GraniteNet ⟹	**Unpacking the conception (what/how framework)**
• Includes meaning (referential) and structure of awareness • Differentiating conceptions (ways of seeing) from experiences	Conception and experience of the learning content (**what** is being learned) ⟷ Conception and experience of the learning process (**how** learning occurs)
	Supporting quotations, mind maps, tables
Digital technologies as learning content domain of particular interest	**Conception of digital technologies**
• Includes *meaning (referential)* and structure *of awareness*	Conception of digital technologies as learning **content** ⟷ Conceptions and experiences of using and learning to use digital technologies (**process**)
	Supporting quotations and mind maps
Third level: Respondent second order perspective ⟹	**Expanding awareness: Learning to understand others' conceptions and experiences and experiencing variation**
	Supporting quotations and mind maps
Critical differences among conceptions by dimensions of variation ⟹	**Relationship to other categories** *Dimensions of variation and critical differences tables*

Appendix T
Experienced learning Barriers and Affordances in the Frontier Learning Conception.

Learning Barriers	Learning Affordances
Fear and shame	**Advice that helps to overcome fear, anxiety and doubt**
I'm still low – I haven't got the confidence. I'm scared – no I'm not scared any more, I know I can't break it. Yes I am still low but I'd like to get up there and learn more…	*I was scared that anything that I would do, I'd get rid of anything I'd done and I wouldn't know. She said – the only way you'll break it is if you drop it. Since she said that, I've felt confident… and I wasn't scared of it so much.*
There must be so many lonely people out there that really, like me, I was ashamed of not knowing anything. I would never ask for help. It's only the kids giving me this thing…. I just had to do it.	**Access to a relaxed and supportive learning environment**
Poor memory – forgetting learning when it is not immediately and frequently applied (used)	*I find it's very relaxed; you come here and just sit down and there's so much else going on around.*
Even like sometimes, in my brain I can read and discuss the book. Later on I can't remember what it was and that's a bit frightening. I know that the more you use your brain, the better it is.	**Trainers/teachers who are patient, who 'give you confidence', who explain things in a way that is easy to understand and who have a reasonably good level of expertise with digital technologies**
I only work two days a week here and I might come in an I've written down stuff, but I can't remember what it's for. Unfortunately I'm getting Alzheimer's disease", when you can't remember things. So I can't remember how I got to where I was. So, if I get into this page, now want to add more, I couldn't remember –	*Number one is the expertise of the staff there. They do seem to be well up with all aspects of computer activity and I have done one learning session, with the big guy who helps people in that way. He is a very knowledgeable sort of person. He gives you confidence I must admit*
Not knowing what there is to know; what you 'need' to learn; what you could be learning about digital technologies – not knowing what you don't know…	**Intergenerational learning**
They come and [ask me] "What do you want to do today"? Well, I don't know, because I don't know what I'm capable of doing! I can't answer the question because I don't know anything about a computer; I don't know all these wonderful things that you can do…. I'm only learning my problem; I'm not learning the wide aspect of what's out there.	*I had young [Toby] here last week and he was just wonderful. He's about thirty-two, looks like a ten year old at times – like a boy. Instead of an hour, I was here about two and a half hours with him and he was really willing to keep going over and over things with me…You could see he had patience.*
Laziness; not taking responsibility for your own learning	**More structured opportunities to learn about digital technologies rather than just learning on an 'as needs' basis – an overview of the scope of the field**
You can please yourself. You can take on what you want to do, but you don't have to so if you are lazy like me, so you don't…but I love to	*Right from the start - I know nothing about Gigabytes, nothing. I don't know when mine is going to run out of anything. The boys just got me a year's 'Wi-Fi' thing. I don't know how to look on that thing to see what I have got left. I don't know anything about those and I'd love to.*

have a little bit of pressure. If I have to produce something, that will push me to do it. If I don't have that, it's maddening...	**Clear and legible handouts or notes that can be downloaded for later reference**
Having to figure it out for yourself where the threshold is too great	*Even if it was something that you could download like that information, because I've often thought, I see you have books in here and 'Idiots Computer Learning' and even for the information that I have learnt here, I've got a little notebook (I should have brought it with me). I'd like to know on that day that you learnt that, you get a piece of paper or download it. How to do that – and its there.*
I had some written down and had a sheet of instructions that was given to me … and I used that for a couple of months but then, what threw me off, the procedures changed at one stage and I didn't get an update of that, so doing it was becoming more and more difficult every time. I was fiddling around and it was just getting harder and harder…	**The opportunity to reinforce knowledge and skills by helping ('teaching') others in need (reciprocal learning)**
As I have mentioned before - the phones, I've tried at times to teach myself how to do things on the phone. Over a period of time, unfortunately, because we live out here, we don't get much use out of texting, so each time we go on a holiday, I say to one of the boys down in Brisbane, when we are at the airport, "give us a little lesson how to text" and then we send texts to them during our holiday. When we come back here and you don't use the text, it goes out of you head. I try to teach myself as much as I can, but then, if you don't use it, there is no point.	*If you had the opportunity, maybe you could teach someone… Help in a simple way. Not too much technology.*
	Doing it yourself; having to figure it out for yourself sometimes
	She couldn't tell us how to solve the problem. I worked and did it myself, which was probably, when you think of it, a good thing. It made me do it. Really, I suppose, it was a good thing.
	A requirement to produce something, a test
	I would love to sit here and do more, maybe a bit more time and become more like a school class and then have tests on what you do. It would be making you do it. Maybe it's a good thing to go home and think, I'm going to solve this… Yes. Do it that day; do your homework, come back next week and at the end of it, do a little test to see if we've picked up anything or anything to add…To see if you can do it.
	I don't want to sound like that I am over confident, but I love to have a little bit of pressure. If I have to produce something, that will push me to do it. If I don't have that, it's maddening. I find that I like a little bit of pressure if I have to produce something.

Appendix U
Dimensions of variation and critical differences between conceptions in Category 1 Frontier Learning Conception and Category 2A (Community) Service Learning Conception- Altruistic Emphasis.

Dimensions of Variation	Category 1: Frontier Learning Conception	Category 2A: (Community) Service Learning – Altruistic Emphasis
Conception of GraniteNet – Meaning and Structure of Awareness		
Conception of GraniteNet	Community Technology Learning Centre ('school')	Community Service/Welfare Organisation ('family'; 'social network')
Focal in awareness	GraniteNet community technology hub	GraniteNet community technology hub
Delimited from Context	A learning centre in the local community	A community service/welfare organisation + community technology hub + website in the local community
Perspective	Customer	Provider
Temporal aspect	Not thematised	Not thematised
Conception of Learning in GraniteNet – Meaning and Structure of Awareness		
Whose learning is focal in awareness	personal learning thematised (others' learning in the thematic field)	others' learning + personal learning equally thematised
Primary Object/s of Activity (noesis)	Learning	Contributing to the work of the helping organisation + learning
Primary Object/s of Learning	Learning about and learning to use digital technologies to communicate with family and (re)connect with old friends	Being able to fulfil tasks/contribute to the practices of the helping organisation + learning about and learning to use digital technologies + personal development
Learning 'frontier'	Digital technologies, digital literacies	Multiple learning frontiers—digital technologies/literacies, organisational knowledge and know-how, facilitation of adult learning, personal development.
Conception of knowledge	Propositional, explicit, valued, mastery, cognitive (resides in the brain)	Propositional, explicit, mastery, cognitive (resides in the head), experiential, practical, capability, know-how
Conception of digital technology content	A frontier; A can of worms	A necessary tool for participating in life in a digital age A frontier, lifeline(second order perspective)
Nature of learning	Primarily intentional, relational, 'de-situated', practical	Participatory, intentional and incidental, relational, situated, practical, reciprocal
Learning processes and mechanisms	Acquisition - Direct, individual instruction ,demonstration and explanation; memorization; practice; observation; exploration; problem-solving; note-taking	Participation in work practices, observation; interaction; teaching others; trial and error; practice; problem-solving; self-directed research, exploration

Appendix V
Conceptions of the content of learning in the (Community) Service Learning-Altruistic conception.

Content domains and their specific knowledge and skills	Examples from interview transcripts
Digital and information literacies **Basic digital and information literacies:** • learning about various digital technologies and applications available • using a personal computer and associated peripherals (mouse, printer, keyboard, usb, dvd etc.) • communicating via email and Skype • using internet browsers and search engines • managing files and folders • viewing, storing, managing and sharing digital photos • downloading and installing programs and applications • using social media • word processing and document production. **More advanced digital literacies:** • using laptops, iPads and mobile devices • using e-books and social media • basic troubleshooting • using various software, including word processing, spreadsheets, digital photo-imaging, PowerPoint presentations, Publisher, Windows XP etc. • using ModX (content management system using html) and LAN to edit the GraniteNet home page • using the GraniteNet database and operating the Internet Café Manager • preparing training materials • using QuickBooks to manage finances • podcasting, cloud computing (record keeping and file sharing)	*"It's about using the internet and using your email. Helping people learn to use software like 'playing' with your digital photographs and helping seniors to make contact with their grandchildren."* *"I don't [know what I'm going to learn] until it crops up. Like a lady with 'Microsoft Outlook', admittedly, I still don't know the whole workings on that program. The Android Tablet, I don't know how that works, but I will learn about that when it comes. As of now I'm doing ModX. I had absolutely no idea until the other day."* *"We've got an Internet Café [program] now which we put in how much money they give us, totals how much hours and how many minutes they get, and then, after that, their computer shuts down and goes back to the 'Café' mode."* *"…learning a little bit more about mobile phone technology and how it can be inter-related with my computer and also cloud computing. Those are three little items that may not be anything in the grand scales of the world, but nevertheless, are interesting little bits and pieces that one can take away and say, 'Guess what I've learnt today?'."* *"Well, at the moment, it's photography. I didn't know a lot about it, so when I offered to help the students with the photography I learnt a lot more than I expected. It's really good to learn when you are teaching."* *"Research, really. Mainly, that's pretty much what I have done since I got here is researching a lot of stuff. Pretty much comparing it— you don't just go in and get the one article and think 'this is it'. Put that article aside and then keep researching to compare it with other ones to make sure that it is true."* *"Well, I suppose the first time I put a page on the web site would be memorable. Only for my own personal gratification, I suppose."*
Organisational knowledge and know-how • learning about how a community service organisation works— its governance and operations	*"Being on the Committee I have to attend lots of meetings. I have to write the minutes because I am involved in that sort of thing [So], being on the Committee and learning things."* *"I'm pretty much learning every day, more about GraniteNet."*

• learning how a community technology-focused organisation works, service management and delivery etc. • learning basic administration and customer relation skills, • learning to make a valued contribution to the work of the organisation.	*"I've been taught how to use the phone desk; everything on the admin desk – how to turn on the computers in the morning, the lights and everything else. The Internet and how to receive our messages— phone messages, write them down and figure it out from there."* *"Computer Café'— over the last couple of weeks, we have learnt how to minimise our hassles with customers coming in, how much time they have on the computer; what computer they are using."*
Facilitation skills (includes expanded second order perspective) • Learning about people's, primarily older adults', perspectives and experiences of digital technologies, their learning needs, motivations and barriers and how to facilitate their digital literacy learning. • Includes learning to understand others' experiences of the digital divide	*"I think a lot of people learn best in their own time, at their own pace [and in their own way]. Simply, that we are all individuals, we can't all learn the same way…"* *"Some of the people, they don't know exactly what they want— they can't express…"* *"Most people seem to be able to learn, but there are some that don't want to learn. They are here to learn but they don't really want to."* *"Too many of them are scared and it's nice to see…it's a joy to see them to suddenly realize that they're not being forgotten; they're not being left behind."* *"A lot of them wish to continue learning, perhaps do photos, or have a look at the Family Tree— how you do history and all that kind of stuff."* *"You need a way for people to learn in an environment that actually suits them. Some of the older people wouldn't go into the community thing if there's lots of kids around, but they might go in there first thing in the morning or on a shopping day when there are other older people around."* *"It comes down to their ability to learn really. I show them the way that I know and they might not be able to grasp that, so I would have to think of a different way to teach them. If I don't know one, it's going to take me a while to figure it out."* *"I never realized, having used computers as long as all my working life, I never realized that there some people have never used them and feel really cut off from a lot of things."*
Personal development learning • Includes generic skills and personal attributes, such as oral and written communication skills, working effectively as part of a team, and lifelong learning skills. • Includes personal development learning where 'self' is seen as learning content (Illeris, 2007) in the form of self-learning, self-actualisation and personal transformation.	*"Socially, I used to be really shy, so that is something that I try to work on. Interacting with the public and stuff, it has been very good for that. Then again, with the interacting, it's something that I have been working on it. Hopefully, I'll get better."* *"I've learnt how to nicely greet customers, using the phone and coming through the door."* *"Then I went down into 'talking to people'. I have always had a problem with talking to people—shy. I was, before I started working here. Talking to the other volunteers and me, actually teaching people, which I said before, I enjoy. I hope they are satisfied with what I am teaching them."* *"I am learning at GraniteNet. I can see and feel that I have improved since I have been at GraniteNet. As a volunteer, I have learnt a lot. [My confidence] has grown all the time, from the time I started here. It is growing."* *"So, coming here a couple of days a week, it gives you a purpose. That is good for your self-esteem."*

Appendix W

Conceptions of the processes and mechanisms of learning in the (Community) Service Learning-Altruistic conception.

Learning processes and mechanisms	Examples from interview transcripts
Learning (intentional and incidental) through participation in organizational practices Contributing to the various activities of the helping organization (including teaching others, completing allocated tasks, "being thrown in at the deep end", and learning from more knowledgeable and experienced peers and through observation.	"When I just started here, basically [Jeffrey] just put me on it and threw it at me." "So that was really a big thing for me, because I got over-excited with the rest of the students and everything. Just learning things that I'd seen before, but didn't know what they were. It really made it more interesting." "The first time ever I took over teaching someone, because no one else was here to do it. It would have been [Conwell], who was here earlier and he was very nice about how I was teaching him. It felt great that I was actually helping someone. I didn't know him— he came in out of the blue and it was great." "Yes. I learn more doing it for somebody else rather doing it for myself. It doesn't stick, up here in my brain, when I'm doing it for myself, but if I'm helping someone else out, then it sticks with me longer, if that makes sense… "Observing— just watching the people here that have been at GraniteNet before, observe what they are doing and how they have done it and give it a go, see my chance. At the moment I am learning that through [Glen] and [Phil]. Something comes in, I'll step in and figure out what the problem is with them and see how they fix it. At the moment, I'm still waiting for my turn, once my confidence is up, to fix one, fix one program." "As a new volunteer, it's really confronting in a way. You say 'My god, what's going on here? ... You have to figure it out yourself. So you either swim or sink."

	"I think there is a lot of learning going on through the works for people learning from each other and all the people coming in and learning to use the page to communicate with other people and with other groups and so on." *"The biggest point in my time here at GraniteNet, the biggest personal change in my time here at GraniteNet applies to straightforwardly, my self-confidence. I've gone from being somebody, who 'thought I could', but not really sure; to somebody who knows that they can, simply because I was backed by a number of people that gave a damn, who provided a little shove in the right direction which I needed, and who trusted, not only my word, but trusted my being; who I was and how things have evolved from there."*
Intentional, individual self-directed learning Includes learning by trial and error, through practising, problem-solving, experimentation, exploration, research, investigation and play ("playing" with the technology and "mucking around with computers")	*"…but I still do it by trial and error and I love doing it and I really want to understand it a lot better and I would love to have more formal training."* *"I just try and practice myself and eventually I figured it out."* *"I just have to buy myself a book and read the book and hit the software. I'm teaching myself a photo processing program called "light blue"—that's my main learning at the moment. I've only just bought the software a couple of weeks ago."*
Occasional participation in structured training sessions	*"I did the course and I found I had a natural affinity for it. After doing that course, I then, more-or-less taught myself how to use Publisher and in the time in between learning Publisher, I've also done a couple of PowerPoint and I have taught myself PowerPoint type of activities… so I have the ability to teach myself that sort of thing."*

Appendix X *Dimensions of Variation and Critical Differences among Sub-categories in the (Community) Services Learning Conception (Category 2: Community of Practice Group).*

Dimensions of Variation	Sub-Category 2A: (Community) Service Learning – Altruistic Conception (core for all three subcategories)	Sub-Category 2B: (Community) Service Learning – Vocational Conception	Sub-Category 2C: Service Learning – Leadership Conception
Conception of Learning in GraniteNet: Learning Context and Environment			
Conception of GraniteNet (*meaning*)	Community Service/Welfare Organisation (*'family'; 'social network'; 'lifeline'*)	Community Service Workplace (*a 'friendly workplace'; 'network for employment'*)	Social Enterprise (*'a risky business*)
Focal in awareness	GraniteNet community technology hub	GraniteNet community technology hub + GraniteNet website/portal	GraniteNet Inc. + GraniteNet community technology hub + GraniteNet website/portal
GraniteNet delimited from its context	A community service/welfare organisation + community technology hub + website in the local community	community workplace + workplace learning centre – Differentiated from other community service organisations and from formal vocational education institutions	A community service/welfare organisation + community technology hub + community portal + social enterprise
Perspective	Provider	Provider	Provider
Temporal aspect	Not thematised	Not thematised	Thematised
Conception of Learning in GraniteNet: Experience of the content and process of learning			
Conception of Learning in GraniteNet (*meaning*)	*a two way street*	*a two-way street with signposts*	*Stepping up*
Whose learning focal in awareness	Others' learning + personal learning equally thematised	Personal learning thematised	Personal, organizational and collective learning thematised

Primary Object/s of Activity	Contributing to the work of the helping organisation + learning	Building individual capability whilst contributing to the work of the helping organisation	Learning to lead the work of the helping organisation
Primary Object/s of Learning	Being able to contribute to the work of the helping organisation + learning about and learning to use digital technologies + personal development	Building individual capability linked to vocational training and employment/career goals + contributing to the work of the helping organisation	Contributing to the work of the helping organisation + building organizational capability + individual leadership capability
Learning 'frontier'	Multiple learning frontiers – digital literacies, organisational knowledge and know-how, facilitation of adult learning, personal development.	Vocational training, career development, employment, personal development	Leadership, organizational development
Conception of knowledge	Propositional, explicit, implicit/tacit, mastery, cognitive (resides in the head), experiential, practical, capability, 'know-how'	competence, codified, reified, ordered	co-constructed, collective, distributed, existential, collaborative, wisdom
Conception of digital technology content	*A frontier, lifeline*(second order perspective) + a necessary tool for participating in *life in a digital age* – *digital immigrant* perspective	Focus on 'hard' technology (equipment), everyday digital technology use and learning affordances – *digital native* perspective	A matter of experience and learning to manage your return on investment – a *naturalized digital immigrant* perspective
Nature of learning	Participatory, intentional and incidental, instrumental, self- and task-directed, practical, reciprocal, communicative, relational, situated in the CoP collaborative, transformative	vocational	Problem-based, inquiry-based, collective, action learning
Learning processes and mechanisms	Social participation; work-integrated learning; observation; interaction; 'teaching' others; trial and error; practice; problem-solving; self-directed research, exploration, discovery, development…	Social participation, work-integrated learning; observation, interaction, teaching others, trial and error, practice, problem-solving, self-directed research, exploration, mutual enhancement, benchmarking, assessment, meta-learning	Social participation, work-integrated learning; observation; interaction; 'teaching' others; trial and error; practice; problem-solving; self-directed research, exploration, discovery, collaborative inquiry, action learning, experimentation

Appendix Y

The content of learning in the Community Information Literacy conception as four related literacies

Content domains	Examples from interview transcripts
Local community knowledge (literacy): Learning about the community and using this knowledge to connect with and become (more) involved in the community including: • Learning about community resources, services, facilities and how to access them • Learning about community news, activities and events and how to become involved • Learning about affordable, available public access to digital technologies and expertise (know-how)	*'Community Information', that was my first thought, especially if you are new to a community* *What was available to the community and what was available to us as newcomers to the community.* *What community services [are] out there?* *Places to get help* *Where In the community things are… where to go for things* *There's a local doctor here, that's the only one that bulk bills. There's chemists – there's only two of them in town.* *To tell people how to contact us.* *Telling the community – if you need help, this is here.* *Information for anything happening in the community…All the groups; when they meet, what they do and so on.* *What sort of things I am interested In and how I can get involved In the community.* *Learn what the community is about; what things you can do for the community.* *Interests that you are interested in and become part of the community* *Where you can go for a reasonable price and get on [to the internet]* *Can get on a computer and talk to someone* *Computer repairs and computer sales; If you can't afford the big stuff.* *Easy access [to computers and the internet]* *Who do you know is the useful person? Who are the tech experts to talk to?*
(Digital) community information literacy (CIL):	*I think the main thing is that we want people to be able to understand what we really do in a simple way, that they can understand*

Learning about your own and other people's information needs and how to access, evaluate, create and share community information with others	*It needs to be simple. You've got to use the "KISS" principle for people. You don't need to make it big words and that.* *You want to go to the section you're interested in…they want to know the information that they want to know.* *We made it a bit bigger so it's easier for people to read.* *I looked at it and decided I didn't like it. I didn't like the fact that it was so tight.. It was so hard to read and even I had trouble reading it.* *They can look at it and go "look there's a phone number "…I also want the email address on there too, or a link, to be able to automatically bring up your email* *I had no idea how we could join them up, because that was the problem – nothing was joined up. It was just a page and you had to scroll through it and find your spot. It was not good for young people. Young people would go, "what the hell?"* *Some of the PowerPoints that other people have made, like little…things you click on, they are quite good…I think that if you see something that bounces up in front of you, it probably does help the memory too, a different kind of memory trigger* *I guess the idea of having screen shots –they work because you can see 'in the flesh'. "This is what it what it looks like when you have done this and then if you go over to this bit here."…. If you can see visually, this is what you do, that seems to be pretty good for letting people know.* *You know, it's just like "a picture paints a thousand words"…because it's much clearer. I could spend an hour describing Stanthorpe's golf course or I could show you one photograph and I can say there's a tree here, next to the tree there's a bunker. The bunker's got a lake in it and there's a kangaroo next to the lake and it will take me half an hour or longer to go round the golf course like that. But if give you one picture it's got everything there. That's the way I think.*

Digital literacies: Learning about and learning how to use digital technologies to: • Access community information • Create, store and share community information with others in accessible formats	*How to use a computer… to actually be able to use the computer and what they should be looking for* *How to work my way around a computer and set up things etc., How to use the internet* *How to turn on a computer, how to look up a page. ..how to do a word document…how to search* *Where you can look up community information* *You can look for this…look at that…look for it…look into that…use that information* *How to beware of scams and things like that…* *Do the research and print it out* *Being able to lock down certain things, if you're looking for stuff, you could actually "bookmark" it and you can go back to it and use it again, or you can "bookmark" it and use the resources off it* *Getting a group message out there…Set up a newsletter and email it out* *[Create] a 'useful links' page…put links in there* *A forum where people can exchange information* *I really need to know – "here's my camera, what do I do and how do I manipulate these to their best?" Yes, and "What other things you have to consider when you use images?"* *I would think that links would be better, because there is so much out there, on the internet, rather than coming up with your own stuff.* *I was thinking that there are a number of things I really need to do in a kind of 'housekeeping' sense*
Foundation literacies: Building and drawing on a solid foundation of basic literacy skills	*You develop a level of competency in literacy* *You really need to make sure you're on top of reading and writing and everything in between* *Literacy is the starting point whether it's reading literacy or if it's digital literacy.* *I have always been very up with it as far as written communications is concerned and I don't have difficulty with doing the newsletter and things like that. I am a reader, I am in a couple of Book Clubs – I read a lot. I feel very confident about my communication skills.*

Appendix Z

Dimensions of Variation and Critical Differences among Conceptions in Categories 1, 2A and 3

Dimensions of Variation	Category 1: Technology Frontier Conception	Sub-Category 2A: Service Learning – Altruistic Conception	Category 3: Community Information Literacy/Social Inclusion Conception
Conception of GraniteNet	Community Technology Learning Centre *('school')*	Community Service/Welfare Organisation *('family'; 'social network'; 'lifeline')*	Community Noticeboard/Lifeline Conception *('it's a way of getting a message out there; of having a lifeline for people')*
Focal in awareness	GraniteNet community technology hub	GraniteNet community technology hub + community organisation	GraniteNet community web portal
GraniteNet delimited from its context	A technology learning centre in the local community	A community service/welfare organisation + community technology hub + website in the local community	Community web portal as an electronic community noticeboard + community technology hub
Perspective	Customer	Provider	Provider and Customer
Temporal aspect	Not thematised	Not thematised	Not thematised
Whose learning focal in awareness	Personal learning (others' learning in the thematic field)	Others' learning + personal learning equally thematised	Others' learning + personal learning equally thematised
Conception of learning in GraniteNet (meaning)	*Conquering a technology frontier*	*a two way street*	*Learning to navigate the terrain*
Primary Object/s of Activity	Learning	Contributing to the work of the helping organisation + learning	Connecting with and contributing to the local community + learning
Primary Object/s of Learning	Learning about and learning to use digital technologies to communicate with family and (re)connect with old friends	Being able to fulfil tasks/contribute to the practices of the helping organisation + learning about and learning to use digital technologies + personal development	Learning about the local community + learning to use digital technologies to access and share community information with others
Learning 'frontier'	Digital technologies	Multiple: digital technologies/literacies, organisational knowledge and know-	Local community + Digital technologies + Community Information literacy

		how, facilitation of adult learning, personal development.	
Conception of knowledge	Propositional, explicit, valued, mastery, cognitive (resides in the brain)	Propositional, explicit + implicit/tacit, mastery, cognitive (resides in the head), experiential, practical, capability, 'know-how'	Propositional knowledge as 'know-that, know-who, know-where, know-when' + Cultural knowledge and understanding Literacies – foundation + digital + community information
Conception of digital technologies as content	*A frontier* *A can of worms*	*A frontier + a lifeline* A necessary tool for participating in *life in a digital age*	*A lifeline* + a place for information exchange *A way of bringing the community together*
Nature of learning	Intentional, instrumental, relational, 'de-situated', self and other-directed, practical	Participatory, intentional and incidental, instrumental, self- and task-directed, practical communicative, relational, situated in the CoP, reciprocal, collaborative, transformative	Intentional, self-directed, instrumental, practical, community-situated (proximate) + situated in digital community information literacy practices, linked to participation in a community of interest or practice
Learning processes and mechanisms	**Acquisition** via direct instruction (one-on-one) – demonstration and explanation; memorization; practice; observation; exploration; problem-solving; note-taking	**Participation** in work practices, observation; interaction; 'teaching' others; trial and error; practice; problem-solving; self-directed research, exploration, discovery, **development**…	**Acquisition**, trial and error, problem-solving, learning by doing, exploration and discovery, experimentation, using digital technologies as learning tool, resource and content, **construction**

Appendix AA
Content domains in the Blended Community Learning conception (Category 4).

Content domains	Examples from interview transcripts
GraniteNet Content Editor Skills Set Learning to use the GraniteNet Community Groups interface, the Community Calendar and other applications to edit the group's web page, publicise group activities and events, disseminate news and manage group communications. Incorporates: • using the ModX Content Management System (CMS) and HTML to edit the group's webpage on GraniteNet; • creating, uploading, disseminating and archiving the group's newsletter or bulletin linked to the group's GraniteNet webpage; • entering and updating activity and event details into the GraniteNet Community Calendar	*"We did the Editor training. When we first set up… and I have to say that I've been pretty happy with the whole ModX system and how it worked; it is simple to use and it is effective for…people who do not have very much IT knowledge …and I'm pretty sure that people like [Jeffrey] who managed the [Community Group G] site is still quite happy with the platform."* *"I've just done the newsletter, which I did yesterday. It went out to everybody this morning at six o'clock, electronically. I've just posted most of the others – I was on my way here. I put a version on the website so that anybody that is looking from outside can pick up the latest one."* *"I do the Bulletin too. I do it in Publisher and upload it. I just find it easier and I'm often sending this link to people—like if they are new to town and they ring up, I'll send them a link to this so they can get the bulletin. So I don't email big attachments. I send them a link to the page and they can then choose when they get it, because some people are still using—they download their emails, rather than look on the web and the bulletin is pretty big and you don't want to email that to too many people."* *"Yes and its quite complicated. So it has already logged me in, but because I've got my own calendar, but I edit the [Community Group D] calendar. I don't use my own. I only use mine to get into my log-in to get to [Community Group D]. So you have to go up to "view" and then 'calendar of [Community Group D]'. Then, if I edit it, it will automatically update— I'll show you—it automatically becomes part of the home page calendar. We have a meeting on Thursday so it's there, but on our [web] page it only shows the [Community Group D] events. It goes up to the end of the year, which I think is really good. Using the group's GraniteNet email address to manage group communications.* *"…and so we now have the Granite Net Email as [our] main email address… We have to make sure that people check it, but it's not as convenient as if it's your own email address and that was what it had been for a number of years. But it became too much of a*

	nuisance to be on our own email address. It is there and we get things sent to the Granite Net address, which is great."
Learning in the specialized domain of the Community of Interest Includes digital technologies as a special interest area.	*"Because my interest is very much into environment and gardening, I've done work mostly for [Community Group F]."* *"The thing is people are so specific about the things they want to learn about. I like learning about web stuff and gardening and canning and preserving and permaculture…"* *"In my photographic club this week, someone (we're all photographers) and someone used the word "DOF" and the lady said, what does that mean?, and everybody else said "Depth of Field". Everyone else knew, except for this lady, because she's at a different level than us. You mustn't think "you're stupid", just that she hasn't learnt this and I have. So she could probably do the same kind of thing with me with cooking. She's not stupid, she just didn't know that particular thing. It's the same with computers— people might know what Excel is and some other people might not know what Excel is. Word or Picassa, all those sorts of things—common in the computer world, but some people walking up the steep learning curve wouldn't know what they were."*
Learning about the affordances and limitations of digital technologies for learning in community with others, (blended community learning).	*"That's one thing that could happen too. Say like '[Community Group A]. There is so much more that they could be doing about promoting. They could be tying in with recipes and cooking and planting guides. But again, if you are involved in [Community Group C], you probably want to garden, you don't want to be sitting behind a computer. It's always a problem with actually doing something and then putting onto the internet to enable someone else to get involved. So, it's a whole other step and involves someone who is actually interested in doing that."* *"The learning, you know that could be the same thing—it's not just taking a photo of your dog. It could be people doing something useful in the community, sharing their skills while they are practicing their skills…"We went to the Community Garden and we found out …there are ways you could get groups together and just share. I think it would be great to have more promotion of what's going on in the community, more networking and letting people know about it, because sometimes people will sit in their backyard or they might just sit at home in the lounge room. They wouldn't want to go to something, but if they could see it on a website, they might say, "Oh look, that's what they did at that Community Garden's Open Day last Sunday".* *"By getting other people involved, it's also enabling new people to learn and it's also giving the initial people an opportunity to teach perhaps, or to have— Stephen Covey—I think what he was saying—I mean I haven't even read it, but my sister has, but she has told me*

	all about it, about the best way to learn something is to teach it to someone else. That is where I think, instead of people sitting in little groups and saying, "Okay we are just going to sit here and do what we like doing", to think more outside and how they can connect with others and then share their skills."
Learning about and learning to manage one's own learning in the area of digital technologies (meta-learning).	*"I've got certain email lists – I'm not on many email lists any more, but I used to be. Now, it's more following blogs on my Google Reader. So sometimes, when there are fifty new things, that's when I start thinking, 'which ones do I not want to read any more?'"* *"There is probably a thousand different skills that we could use to do with computers and the kids obviously use more on the entertainment side, and I just think that, well, that's nice but I think you just have to prioritise what you are going to learn and which are the most important skills, the more useful skills. I know you can waste a lot of time doing photo editing etc. so I just think—I know it's there but I don't need it."*

Appendix BB
The Communities of Interest Cluster: Commonalities and Differences between Conceptions of Learning in Categories 3 and 4.

Dimensions of Variation	Category 3: Community Information Literacy/Social Inclusion Conception	Category 4[191]: Blended Community Learning Conception
Conception of GraniteNet	Community Noticeboard/Lifeline Conception *('it's a way of getting a message out there; of having a lifeline for people')*	Community of Interest Conception *('a place to do all those community things'*
Focal in awareness	GraniteNet community web portal	GraniteNet community web portal + w.w.w + social media
GraniteNet delimited from its context	Community web portal as an electronic community noticeboard + community technology hub	GraniteNet web portal is one of many online spaces and mechanisms for interacting with communities of interest
Perspective	Provider + Customer	Customer + Provider
Temporal aspect	Not thematised	Not thematised
Who's learning focal in awareness	Personal learning and others' learning equally thematised	Personal learning and others' learning both thematised, with personal learning focal in awareness
Conception of learning in GraniteNet - Meaning	*Learning to navigate the terrain*	*'interacting with the community in groups and things like that'*
Primary Object/s of Activity	Connecting with and contributing to the local community + learning	Connecting with and contributing to the Community of Interest + Learning

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[191]   Arrow indicates that the conception in category 3 is a 'prerequisite' for the conception in category 4 (i.e. there is a clear learning pathway).

Primary Object/s of Learning	Learning about the local community + learning to use digital technologies to access and share community information with others	Learning to be a Content Editor for the group's webpage on GraniteNet + learning about and learning to use digital technologies and environments for interacting and knowledge-sharing
Learning 'frontier'	Local community + Digital technologies + Community Information literacy	Content Editor Skills Set + the affordances of digital technologies and environments for community interaction, involvement and learning
Conception of knowledge	Propositional knowledge as 'know-that, know-who, know-where, know-when' + Cultural knowledge and understanding Procedural knowledge, computer 'Know-how' Literacies – foundation + digital + community information	Propositional knowledge as 'know-that, know-who, know-where, know-when' + Cultural knowledge and understanding Procedural knowledge, digital 'Know-how' Digital Community Information literacies Knowledge is distributed, resides 'out there' in artefacts and expert others Knowledge is co-generated and shared via interactions with others
Conception of digital technologies as content	*A lifeline* + a place for information exchange *A way of bringing the community together*	*A phenomenal communication tool…for interacting with the community in groups and things like that*
Nature of learning	Intentional, self-directed, instrumental, practical, community-situated (proximate) + situated in digital community information literacy practices, linked to participation in a community of interest or practice	Intentional, self-directed, instrumental, practical, community-situated (proximate) + situated in digital community information literacy practices, linked to participation in a community of interest or practice, connectivist
Learning processes and mechanisms	**Acquisition**, trial and error, problem-solving, learning by doing, exploration and discovery, experimentation, using digital technologies as learning tool, resource and content, **construction** (Incentive = **participation** in associational life of the community)	**Acquisition**, trial and error, problem-solving, learning by doing, exploration and discovery, experimentation, using digital technologies as learning tool, resource and content, **construction** + **Participation** in the CoI—interaction, knowledge-creation and knowledge-sharing in blended face-to-face and online interactions

Appendix CC
Processes and mechanisms of learning in the Blended Community Learning conception (Category 4).

Learning processes and mechanisms	Examples from interview transcripts
Practical learning - procedural Developing the required procedural knowledge and practical skills, or competencies, to perform procedural tasks through structured group and individual practical learning experiences, trial and error, 'play', repetition and practice	*"We had training from [Kate] and then it really just was a matter of practice.* *"The main thing that I have learnt that is important and valuable is to update the website, but I still do it by trial and error and I love doing it and I really want to understand it a lot better and I would love to have more formal training."* *"[Kate] provided some good work— a set of sheets— remember to do this and this and this."* *"This is one of the more complicated things. You have to play with that…"* *"Sometimes I have to look at the instructions again, just to make sure—actually what I normally do—I go to an existing event and say "copy entry" and that brings in all the locations, the times and all I have to do is change the topic and the date…Yes. If I go "copy entry" now, it's brought everything in and all I do is change the title and I usually copy all of that off the Bulletin anyway."* *"Sometimes you click on something and "Oh, look at that!" When I first learnt, I did have a walk-through and I do have that on a shelf somewhere and it just had a few steps on how to do things… Sometimes you just have to go backwards and forwards and think, "Have I done this?" or "I'll go check this" and I'll go back."*
Practical learning (experiential): Planning, problematizing, researching, dialoguing, acting and reflecting on actions and experience to develop and enhance conceptual knowledge and understanding, for example, of one's own relationship with digital technologies, how digital technologies work, how they can be used to	*"Well, I did think about learning more about it, and then I thought 'No, all you need for this for this English class really is the information that it is available'. That's all people need, so I didn't worry about it. I thought about having a big web site putting all my work sheets up, or something, but then I thought, I haven't got time to do that."* *"At the same time, Facebook doesn't really have anything for learning. It's more "push", you share certain things…"* *"I am thinking about website training like if you're using the website and entering in content, there is probably stuff to be learnt. But if you are a volunteer like most community group people are, you don't have time to volunteer and be trained in an extra skill. Your*

enhance practice, and how to manage and prioritise technology-related learning.	*volunteering is all about being on the ground, involved in that stuff and actually putting stuff on the website. It takes time."* *"Then saying "I'm going to get trained to put stuff on the website", that's a whole other thing, so you end up thinking, "How much time am I going to spend doing this, when I really should be out there, doing grass roots stuff'? So, that's another issue…"* *"One thing I always question is, "who looks at it?".. And there is always that concern or worry that is it all for naught: Are you doing anything useful with having that information?"* *"I find it very frustrating at times that there are a number of things that I'm restricted in doing that I would like to do and be more creative with, like ModX. Background colours – a bit more zip. In order to be creative, it's very limiting."*
Practical learning (literacies): Cultivating over time and through regular practice digital community information literacies to: • link and connect people with people, people with information • create, locate, source, evaluate, store, transform information and original knowledge and share it with others using various digital media	*"You can communicate with your community members quickly and efficiently 'what's on' in your community group…community information dissemination."* *"…then linking the community groups with volunteers and people who are interested. Letting people know about all the different community groups here – both the local and new people in town…"* *"I actually did a little photo "expose" of a particular meeting that we went to where was some really gorgeous colours and what-not."* *"Yes, I'm always looking for information… someone on the [Community Group G] site asked for digital copy of a story by some famous author and did anyone know where to find it and I managed to find it online so I sent it… I went to Gutenberg Press and had a look there, because they've got so many. I did a general search first and then—that's right, it was a P.G. Wodehouse story. I only found a short video on u tube first…"* *"We look it up on the net and in America, because they have a lot of really great organic and farming people who just love sharing their information, and you will get a step-by-step, like a photo instructions basically."* *"Using computers for searching is something I do all the time. Sourcing, creating and sharing, managing and sharing information with others…"*
Practical learning - Networked Participating in one or more online communities of learners and learning networks where knowledge in the specialised interest and practice domains is co-	*"You know all these forums that you have, which are fabulous when you are wondering about a question. You have these forums of people who have discussed that forever. You find interesting information…"* *"I tell all my friends that this is what I have written about and they can comment on my Facebook page because it's so easy to share with your friends. Often you are doing things that at least a few of your friends are interested in, so it's easy to build things up like that."*

constructed, distributed and shared using a variety of media	*"They really know how to use the social media… the permaculture people have over twenty thousand followers, because people know that they do create good information and every single thing that they post, is worth following."* *"Every week, they post something and it's not re-posting something they have learnt somewhere else. They are actually creating knowledge and resources and sharing it. They are one of the few people that I follow, that don't just recycle."* *"She is creating original knowledge and not just "blah" opinions, or sharing other people's stuff. There are not that many people that create content."*
Blended community learning Participating in one or more blended learning communities and social networks where online and offline learning experiences and interactions focussed on specialised domains of interest and practice are combined and where people have an opportunity to teach others and share their skills.	*"To interact with the community in groups and things like that…When you are interacting with other people, you always learn stuff anyway."* *"I'm involved with the local [Community Group H], but I'm also involved online. We have an email list and we are always talking about different things and asking each other questions if we get something on Health Line and we have no idea about. We are always asking each other and learning from those more experienced counsellors."* *"This is about learning activities as opposed to information. The Community Noticeboard is great for information, but if you want to know what activities can I get involved in…"* *"Certainly, I do learn a lot. I am really interested in Permaculture and I am going to do a two-week course with a group in Mudgee. Doing a two-week, hands-on, in the field course, but they, every week, they post and it's on their website and their blog, so I get it by RSS, but they also post it to their Facebook page."* *"There are certainly things that I want to translate from my online learning experiences to in person learning experiences. I follow a lot of parenting bloggers as well. I would love to set up a parenting group, where we share. There are certain things that you can do in person and share ideas. How to work with your children and things like that and I'd love to set one up when my kids are a little bit older. They are just so time-consuming at this age. I guess that's what we do with [Community Group C].*

Appendix DD
Task-based learning content and related learning processes in the Digital Stewardship/Enterprise Learning conception.

(Task-based) Learning 'Content'	Examples of Related Learning Processes
• Designing and developing community web portal features and functions in response to technical specifications and community requirements (includes MoDX CMS, PHP, HTML, Java script, web hosting, networking, governance, security, accessibility etc.)	• Visioning, research (independent and collaborative – online and face-to-face) • Intentional, practical learning: problematising, experimentation, (co-)construction • Participating in structured training courses, conferences and seminars/webinars • Ongoing incidental learning
Being that ModX was new to me and new to Granite Net, a lot of what I did was kind of – "So we have a community group, we have a Content Editor. We need to give them a User Account and we need to give them an area within Granite Net that they have access to edit, update, change etc." But behind the scenes of course, I needed to create a template for the website, so that when a person logs in and changes something, it doesn't mess up the website, so there are controls in place.	
• Developing (simple, streamlined) processes and procedures for users to follow (Content Editors, GraniteNet 'technical' volunteers)	• Practical learning: Problematising, knowledge creation, construction (processes, artefacts)
To make it easy enough for someone else to create a user account and assign security to, so that anyone in Granite Net could create a new community group or whatever…Usability – for me it's always about usability, it's all process-driven, you go "What is the process to go through and how can I make it as simple as possible?"	
• Providing instruction, advice and support to users (Content Editors, volunteers, local business enterprises)	• Learning by teaching others – creating knowledge, construction (processes, artefacts)
I've always found that when you have to teach someone a skill, you learn it more yourself, because you really have to do the research and figure out how to explain things…What confuses me sometimes I might know two or three ways to do a certain thing. I go, "Which way is the user most likely to remember?"	
• Responding to changing requirements – developing new functionalities required by users of the online community	• Practical learning by doing, problematising, experimentation, trial and error

Then we would get requests for a new functionality, like one of the groups needed one of the members' areas to be password-protected – something that everyone in that group was allowed to see, but they didn't want the general public stumbling across it – so they had a log-in function added so their members don't have user accounts for GraniteNet itself, because that would be too hard to administer, but there's a place where the Content Editor can set a password which they can then share with their members and the members can log-in and they get to a secure area…	
• Troubleshooting ('fixing') problems that emerge; working within and responding to changes in the broader world wide web environment	• Trial and error, problem-solving, networking and research (online) (including "calling on other people who know")
There are things that we learn all the time about ModX, like new features that come out and now we can put a really easy Gallery in, which is completely integrated into ModX—it's not a separate program—that we could put in to the Camera Club, and it is easy to add them.	
• Managing website accessibility and security	• Self-directed research, problem-solving • Participation in structured courses (face-to-face and/or online)
There are a lot of things in there that I have a basic understanding of, some security aspects. There are people I know that are really good at security and networking and things like that. I'll say, "This might be the problem" and they can go and validate that for me.	
• Maintaining and improving the website	• Problem-solving • Refining, streamlining (construction)
For me, it was more administration, making sure that everything kept ticking and everything worked, in the way that people expected it to work… When I can't figure out something, that's when I start researching – "Okay, what am I missing here? Is there's something I don't know?" There are plenty of technologies that I don't know and there are plenty of technologies that I just have a basic understanding of. That's when you start calling on other people who know…	
• Leaving a trail for others (administrators/ developers) to follow	• Construction – comments, processes, artefacts
I always work on the principle that if I drop dead tomorrow, I don't plan to, but if I did, I know that all my existing IT clients have all the software they need to get themselves out of strife, shall we say. I know that we always have somebody else that knows how to do what I've changed and I always try to comment the changes that I make. It helps…	
• Envisioning new opportunities, possibilities for the community portal	• Visioning, creating (ideas, visions) • Construction – processes, artefacts
I have always wondered if there was, I think we've talked about it a few times, is having an 'on-line' kind of learning space… I think it was more resources for people to further their skills in certain places like – I guess what I tried to do with the article that I was writing for the Granite Belt magazines. So some people may have heard of the technology and let me try to explain a little bits and give them resources to find out more, or if they want to find out more.	

Appendix EE
Commonalities and Differences between Conceptions of Learning in Categories 4 and 5.

Dimensions of Variation	Category 4: Blended Community Learning Conception	Category 5: Digital Stewardship/Enterprise Learning Conception
Conception of GraniteNet	Community of Interest Conception **('a place to do all those community things')**	Virtual Community Conception *('my local community online' 'a kind of realm')*
Focal in awareness	GraniteNet community web portal + www + social media	GraniteNet community web portal + www + social media
GraniteNet delimited from Context	GraniteNet web portal is one of many online spaces and mechanisms for interacting with communities of interest	GraniteNet is an online community for Stanthorpe (differentiated from but strongly linked to the local geographical community) with a past, present and possible future. A virtual community distinguished from the physical community, as a community web portal distinguished from 'face-to-face' computer skills training (of 'low-tech' people)
Perspective	Customer + Provider	Developer
Temporal aspect	Not thematised	Thematised
Who's learning focal in awareness	Personal learning and others' learning both thematised, with personal learning focal in awareness	Personal learning (as practical learning + enterprise learning) and others' learning both focal in awareness.
Conception of learning in GraniteNet - meaning	*"Interacting with the community in groups and things like that".*	*"I'm good at fixing problems. I like to be able to fix them".*
Primary Object/s of Activity	Connecting with and contributing to the Community of Interest + Learning	Developing and stewarding the community web portal + building technology expertise and developing professional networks *(enterprising)*
Primary Object/s of Learning	Learning to be a Content Editor for the group's webpage on GraniteNet + learning about and learning to use digital technologies and environments for interacting and knowledge-sharing	Building technology expertise for the purposes of enacting the vision of the GraniteNet community web portal and for enhancing enterprise (career) opportunities

Learning 'frontier'	Content Editor Skills Set + the affordances of digital technologies and environments for community interaction, involvement and learning	Digital stewardship + Enterprise development (web development)
Conception of knowledge	Propositional knowledge as 'know-that, know-who, know-where, know-when' + Cultural knowledge and understanding Procedural knowledge, digital 'Know-how'; Digital Community Information literacies; Knowledge is distributed, resides 'out there' in artefacts and expert others; Knowledge is co-generated and shared via interactions with others	Know-how—"Techne"—practical knowledge (includes both tacit and explicit) + cultural Knowledge created and shared in practice Knowledge is distributed, resides 'out there' in artefacts and expert others; Knowledge is co-generated and shared via interactions with expert others
Conception of digital technologies as content	*A phenomenal communication tool…for interacting with the community in groups and things like that*	*A kind of realm*
Nature of learning	Intentional, self-directed, instrumental, practical, community-situated (proximate) + situated in digital community information literacy practices, linked to participation in a community of interest or practice, connectivist.	Intentional and incidental, self-directed, task-based, practical + situated in the GraniteNet Web Developer/Administrator role Focus on digital technologies as learning content, process and environment; Learning as bricolage linked to online networks of interest and practice; Building digital expertise linked to network and enterprise development focal in awareness.
Learning processes and mechanisms	**Acquisition**, trial and error, problem-solving, learning by doing, exploration and discovery, experimentation, using digital technologies as learning tool, resource and content, **construction** + **Participation** in the CoI—interaction, knowledge-creation and knowledge-sharing in blended face-to-face and online interactions	**Construction,** trial and error, problem-solving, learning by doing, exploration and discovery, experimentation, using digital technologies as learning tool, resource, content and environment. Imagining, envisioning, problematising, creating, constructing, research, investigation, experimentation, sourcing knowledge, information, tools and using them to create something new, bricolage. **Participation** in various communities and networks of interest and practice (CoIs, CoPs, NoPs)

Appendix FF
Dimensions of Variation and Critical Differences among Conceptions of Learning in Categories 2A, 4 and 6.

Dimensions of Variation	Sub-Category 2A: Service Learning – Altruistic Conception	Category 4: Blended Community Learning Conception	Category 6: Community Technology Capacity-building Conception
Conception of GraniteNet	Community Service/Welfare Organisation *('family'; 'social network'; 'lifeline')*	Community of Interest Conception **('a place to do all those community things'***)*	Capacity-building Conception *('a way of strengthening the community'))*
Focal in awareness	GraniteNet community technology hub	GraniteNet community web portal + www + social media	GraniteNet Inc. + Technology hub + community portal + www
GraniteNet delimited from Context	A community service/welfare organisation + community technology hub + website in the local community	GraniteNet web portal is one of many online spaces and mechanisms for interacting with communities of interest	GraniteNet web portal = tool/facility + window to the world/window to the community GraniteNet community technology hub = mechanism for helping people to access and use the tool effectively (i.e. GraniteNet is the tool, the facility and the instructor all in one)
Perspective	Provider	Customer + Provider	Developer
Temporal aspect	Not thematised	Not thematised	Thematised
Whose learning focal in awareness	Others' learning + personal learning equally focal in awareness	Personal learning and others' learning both thematised, with personal learning focal in awareness	Others' learning focal in awareness, with personal learning thematised but in the ground
Conception of learning in GraniteNet - meaning	*'a two way street'*	*'interacting with the community in groups and things like that'*	*"Empowering people; explaining to people; helping people"*
Primary Object/s of Activity	Contributing to the work of the helping organisation + learning	Connecting with and contributing to the Community of Interest + Learning	Empowering seniors + strengthening the community
Primary Object/s of Learning	Being able to contribute to the work of the helping organisation	Learning to be a Content Editor for the group's webpage on GraniteNet + learning about and	Personal learning is not the intentional experience (noesis) and is taken for granted

	+ learning about and learning to use digital technologies + personal development	learning to use digital technologies and environments for interacting and knowledge-sharing	
Learning 'frontier'	Multiple learning frontiers – digital literacies, organisational knowledge and know-how, facilitation of adult learning, personal development.	Content Editor Skills Set + the affordances of digital technologies and environments for community interaction, involvement and learning	ICTs for Community Development (Community Informatics)
Conception of knowledge	Propositional, explicit, implicit/tacit, mastery, cognitive (resides in the head), experiential, practical, capability, 'know-how'	Propositional knowledge as 'know-that, know-who, know-where, know-when' + Cultural knowledge and understanding Procedural knowledge, digital 'Know-how'; Digital Community Information literacies; Knowledge is distributed, resides 'out there' in artefacts and expert others; Knowledge is co-generated and shared via interactions with others	Expanding awareness, insight, **power**, capability Experiential Propositional knowledge as 'know about', 'know that' ('*facts*') Technology 'know-how', expertise (Techne)
Conception of digital technologies as content	*A frontier, lifeline*(second order perspective) + a necessary tool for participating in *life in a digital age – digital immigrant* perspective	*A phenomenal communication tool…for interacting with the community in groups and things like that*	Communication tools/community utility for life in a digital age (differentiated from printed press and telephony) + Window to the world
Nature of learning	Participatory, intentional and incidental, instrumental, self- and task-directed, practical communicative, relational, situated in the CoP, reciprocal, collaborative, transformative	Intentional, self-directed, instrumental, practical, community-situated (proximate) + situated in digital community information literacy practices, linked to participation in a community of interest or practice, connectivist	Situated in the practice of Community Informatics Incidental, practical, experiential, existential (life-based), relational (self and world) Expanding awareness
Learning processes and mechanisms	Social **participation** in the CoP; work-integrated learning; observation; interaction; 'teaching' others; trial and error; practice; problem-solving; self-directed research, exploration, discovery, development…	**Acquisition**, trial and error, problem-solving, learning by doing, exploration and discovery, experimentation, using digital technologies as learning tool, resource and content, **construction + Participation** in the CoI – interaction, knowledge-creation and knowledge-sharing in blended face-to-face and online interactions	**Accretion, e**veryday interactions with the world and other people (**exposure to variation** of information, situations, perspectives, knowledge, expertise) Problematising, discovery, research **Participation** in the GraniteNet CoP

Appendix GG
Content domains in the Learning Community conception (Category 7).

Content domains	*Examples from interview transcripts*
Learning about the local community • includes learning about how others see and experience GraniteNet, digital technologies and ICTs) • experienced as propositional, relational and experiential knowledge • Includes expanding awareness – learning about how others experience the world and phenomena in the world as the respondent second order perspective	*It was nice, just learning about each other and the community."* *"It's quite a difficult one actually, because we all have our own slightly different vision of what GraniteNet is…Seeing how other people perceive Granite Net. See how other people see the opportunities that we may not consider."* *"It's allowed us to see where the greatest community interest lies, but it isn't always where we think it might be. I think the most popular courses have been 'Using iPad', 'Using Android'. Also a lot of interest is not necessarily translated into attendance at the basic Introduction to the community and I'm sure part of that is perhaps some fearfulness or anxiety on the part of the potential people who can participate and we need to manage that in a different way."* *"…the realisation that there were so many people in the community, who were involved and so many people who wanted to share and network and relate to each other via Granite Net."*
Learning about GraniteNet as a community development and learning community project • experienced as the practice of community development.	*"'What is GraniteNet about? What are we going to use?" People were struggling to try to understand the concept and still do…"* *"Well, "learning community" in the sense that if GraniteNet is going to be the hub of the learning community, then people have to go there for specific reasons and they have to be connected to it as a community. "It's a community tool for engaging and connecting with the community, youth and digital literacy mechanisms and skills, but it's really 'for the community by the community', that's what drives it. So there's an effect – whatever the community wants it to be."* *"Engagement of sectors, I guess it's a little bit like participation and inclusion, but I also think we do very well with the Seniors; we have a strong connections with the Disability Sector. There are probably other areas that we haven't touched. We have tried and not been successful yet with the business community…"* *"I suppose I also learnt that this was a project which was initiated with a few people's keenness, not necessarily with the full community. We have driven it – yes – but we have*

	driven it at a cost, a lot of cost to the key people involved over a long period of time. There aren't too many of those left. But in saying that I've also learnt that in driving it over that amount of time we've also been able to attract eventually people that are passionate and keen about it and are now driving it." *"… So that's something that we can be effective and doing more learning and we need to be more effective. We need to put greater emphasis on it, because it's been a great experiment and some of it has been good, but not all of it has been…""But I think it lost some its focus because we lost momentum through that area and we also lost the Council in terms of the potential for their involvement to show leadership in terms of learning community. I think that was significant."*
Learning about (lifelong and life-wide) learning • includes learning about the affordances of digital technologies for lifelong learning and civic engagement • experienced as propositional, relational and experiential knowledge.	*"Literacy is the starting point whether it's reading literacy…or digital literacy"* *"Because I think that without the reflective component that comes with participation in something, with the action, then you don't learn and I think learning is essentially experiential. If you can incorporate it with, or integrate it with knowledge and that's how knowledge becomes learning."* *"Isn't that how we do most learning – experience, community?"* *"Everything in life is an informal learning activity…"* *"I see learning has a different focus to just information. Because I think that without the reflective component that comes with participation in something, with the action, then you don't learn and I think learning is essentially experiential. If you can incorporate it with, or integrate it with knowledge and that's how knowledge becomes learning."*
Learning the 'praxis' of community development, community engagement and community informatics	*"I guess I learnt the importance of how you engage with the people, in terms of how you start out bringing people on board and that requires making it very clear about expectations and what people see things as and where they're not familiar and they don't understand that you have to have the time to spend to make…not "to make" – to help them to understand what's going on."* *"I see a learning community needs leadership and it needs to be promoted…"* *"It's quite satisfying to feel some 'unpacking' of all that kind of thing and also to contribute to the future development and seeing who else we can bring on-board. What opportunities that there are. Maybe I just like that kind of thing… Engaging with the different parts of the*

	community and all those external partners and trying to bring that together in a meaningful way…"
	"Certainly about stakeholder expectations and about the time factor – time is critical. Planning, that action research model that certainly is about and … the reflection we did over GraniteNet over a long period of time has certainly helped one in learning, not just about GraniteNet but theoretically about why people get involved in and motivated to run projects, why they keep staying with something and why community is so important."
	"See how different communities give different priorities or different focus to supporting the kind of things we were doing in Granite Net…All the different communities, figuring out what would and what wouldn't work in our community".

Appendix HH

Dimensions of Variation and Critical Differences among Conceptions in Categories 5, 6 and 7.

Dimensions of Variation	Category 5: Digital Stewardship/Enterprise Learning Conception	Category 6: Community Technology Capacity-building Conception	Category 7: Learning Community Conception
Conception of GraniteNet	Virtual Community Conception (*'my local community online' 'a kind of realm'*)	Capacity-building Conception (*'a way of strengthening the community'*))	Community Development Project (*'a lifelong learning catalyst' 'the hub of the learning community*)
Focal in awareness	GraniteNet community web portal + www + social media	GraniteNet Inc. + Technology hub + community portal + www	GraniteNet Inc. + Technology hub + community portal + www
GraniteNet delimited from its context	GraniteNet is an online community for Stanthorpe (differentiated from but strongly linked to the local geographical community) with a past, present and possible future. A virtual community distinguished from the physical community, as a community web portal distinguished from 'face-to-face' computer skills training (of 'low-tech' people)	GraniteNet web portal = tool/facility + window to the world/window to the community GraniteNet community technology hub = mechanism for helping people to access and use the tool effectively (ie GraniteNet is the tool, the facility and the instructor all in one)	A community learning project differentiated from other community development and community engagement initiatives Potentiality focal in awareness – contingent upon what the community wants it to be and is prepared to invest
Perspective	Developer/Provider	Provider + Developer	Developer
Temporal aspect	Thematised	Thematised	Thematised
Conception of Learning in GraniteNet – Meaning	*'I'm good at fixing problems. I like to be able to fix them'*	*"Empowering people; explaining to people; helping people"*	*"a raft of learning opportunities"*

Whose learning focal in awareness	Personal learning (as practical learning + enterprise learning) and others' learning (individual) both focal in awareness.	Others' learning (individual and community) focal in awareness, with personal learning also thematised but in the ground	Personal learning and others' learning – individual and community – focal in awareness
Primary Object/s of Activity	Developing and stewarding the community web portal+ building technology expertise and developing professional networks *(enterprising)*	Empowering seniors + strengthening the community	Leverage digital technologies to develop the learning community + Build CD/CI knowledge, understanding, skills
Primary Object/s of Learning	Building technology expertise for the purposes of enacting the vision of the GraniteNet community web portal and for enhancing enterprise (career) opportunities	Personal learning not the intentional experience (*noesis*)	Learning about the community and how ICTs can be leveraged for community development and engagement (community learning)
Learning 'frontier'	Digital stewardship + Enterprise development (web development)	ICTs for Community Development	Community Informatics – using ICTs to promote participation in lifelong learning.
Conception of knowledge	Know-how—Techne – practical knowledge (includes both tacit and explicit) + cultural Knowledge created and shared in practice Knowledge is distributed, resides 'out there' in artefacts and expert others; Knowledge is co-generated and shared via interactions with expert others	Propositional as 'know about', 'know that' ('*facts*') Techne Technology know-how, expertise Expanding awareness, **power**	Propositional, explicit, implicit/tacit, mastery, cognitive (resides in the head), experiential, practical, capability, 'know-how'
Conception of digital technology content	*A kind of realm*	Communication tools/community utility for life in a digital age (differentiated from printed press and telephony) + Window to the world	*(Tool +) A lifelong learning catalyst, conduit for a raft of learning opportunities*
Nature of learning	Intentional and incidental, self-directed, task-based, practical + situated in the GraniteNet Web Developer/Administrator role	Situated in the practice of Community Informatics	Situated in the practice/praxis of Community Development, Intentional and incidental

	Focus on digital technologies as learning content, process and environment; Learning as bricolage linked to online networks of interest and practice; Building digital expertise linked to network and enterprise development focal in awareness.	Incidental, practical, experiential, existential (life-based), relational (self and world)	Accumulative, (co)generative, Experiential Experimental, Transformative
Learning processes and mechanisms	**Construction,** trial and error, problem-solving, learning by doing, exploration and discovery, experimentation, using digital technologies as learning tool, resource, content and environment. Imagining, envisioning, problematising, creating, constructing, research, investigation, experimentation, sourcing knowledge, information, tools and using them to create something new **(*bricolage)*** **Participation** in various communities and networks of interest and practice (CoIs, CoPs, NoPs).	**Accretion, e**veryday interactions with the world and other people (**exposure to variation** of information, situations, perspectives, knowledge, expertise) Problematising, discovery, research **Participation** in the GraniteNet CoP	ALAR and PAR&E **Interaction** with others Problematisation, inquiry Discovery, experimentation Perspective transformation Visioning

Appendix II
Summary of conceptions of the learning content and process in the seven categories in the outcome space.

Conceptions of Learning	Content Domains	Learning processes, mechanisms and incentives
Category 1: Frontier Learning conception *Conquering a technology frontier* Object of activity (noesis) = digital literacy learning Digital technologies = frontier/lifeline	Single Content Domain – Basic digital literacies: Learning about and learning to use digital technologies including: • Learning about computers, the internet and associated digital technologies, including the scope of the field, the terminology etc. • Learning to use computers, mobile devices and applications for communication (email, Skype), hobbies and interests (internet) and recreation (games) • Learning how to manage in the online environment	**Practical learning:** Individual acquisition of knowledge and skills, Intentional, instrumental, relational, 'de-situated', self and other-directed **Mechanisms:** Acquisition, communication **Learning Incentive:** Social participation (interaction/communication with significant others)
Category 2: (Community) Service Learning Conception 2A: Altruistic emphasis *A two-way street*	Multiple content domains: • Digital literacies (as above, basic, and also more advanced) • Organisational knowledge and know-how (includes community governance, administration, customer service)	**Practical learning:** Participation in organisational work practices – completion of tasks, trial and error, problem-solving, experimentation, observation, practice, structured training, self-

Object of activity = contributing to the work of the helping organisation Digital technologies= frontier/lifeline	• Facilitation skills - adult learning (older adults learning digital literacies) • Generic skills, 'soft' skills and personal development learning • Learning about people	directed learning and independent research, collaboration **Mechanisms:** Experience, social participation (CoP), communication, interaction and inter-action, collaboration, experimentation **Learning Incentive:** Social participation (participating in and contributing to the work of the CoP; altruism; community and group affiliation)
2B: Vocational emphasis *A two-way street with signposts* Object = vocational learning + altruistic learning Digital technologies = tools, applications	**As above, plus:** • Vocational learning • Career development learning • Meta-learning	**Processes and Mechanisms:** As above, plus mutual enhancement, benchmarking/evaluation/appraisal, meta-learning **Learning Incentive:** As above, plus building capability, vocational learning and career development (learning opportunism)
2C: Leadership emphasis *Stepping up* Object = altruistic + organisational leadership Digital technologies= essential living, learning and working tools	**As for Altruistic emphasis, plus:** • Leadership skills and qualities • Leading and managing a community organisation, Community engagement	**Processes and Mechanisms:** As for Altruistic emphasis, plus collective, problem-based action learning and inquiry, experimentation, development **Learning incentive:** As for Altruistic emphasis, + community and organisational affiliation
Category 3: Community Information Literacy/Social Inclusion conception *Learning to navigate the terrain*	Learning about and learning to connect with the local community: • Local community knowledge • Digital literacy	**Practical learning:** Acquisition of knowledge and skills Intentional, instrumental self-directed learning, practice, procedural, experiential, literacy practices

Object= community knowledge+ digital community information literacy Digital technologies = community lifeline/network	• Community Information Literacy • Foundation literacies	**Mechanisms:** Acquisition, trial and error, problem-solving, discovery, experimentation, creation, envisioning **Learning Incentive:** social participation (community affiliation; altruism)
Category 4: Blended Community Learning conception *Doing all those community things* Object= Digital skills + Participation and learning in CoI Digital technologies= community network	GraniteNet Content Editor Skills set COI knowledge/skills Blended community learning Digital meta-learning	**Practical learning:** Situated in GraniteNet Content Editor role; participation in hybrid learning communities and networks; Self-directed research, knowledge- and information-sharing, procedural, experiential, literacy practices **Mechanisms:** exchange, co-construction, creation **Learning Incentive:** social participation (community and group affiliation; learning opportunism)
Category 5: Digital Stewardship/ Enterprise Learning conception *My local community online* Object= Digital inclusion, stewardship/Enterprising Digital technologies= a kind of realm	Technical expertise - digital environments Web design Digital stewarding Programming Enterprise learning/development	**Practical learning:** Situated in the web design/ administration role, problem-based, experimentation, networking, participation in hybrid learning communities and networks **Mechanisms:** investigation, inquiry, experimentation, construction, networking, research, creation, bricolage **Learning incentives:** Community affiliation; Personal mastery + digital stewarding + enterprising

Category 6: Community Technology Capacity-building conception *"A way of strengthening the community; me in the world, learning new things"* Object = community capacity-building; digital inclusion/empowerment Digital technologies= community utility/asset/tool/window to the world	Technical expertise – digital technologies ICTs for community development (Community Informatics)	**Practical learning:** Situated in the practice of Community Informatics; incidental, practical, experiential, relational, Life-based learning: existential, (living-as-learning; working-as-learning); experience, problem-solving **Mechanisms:** Accretion, exposure to variation, envisioning **Learning incentive:** Community and organisational affiliation + personal mastery
Category 7: Learning Community conception *Isn't that how we do most learning - experience? Community?* Object= Community Development Digital technologies= a conduit to a raft of learning opportunities	Community Development Praxis Community engagement Learning about the local community and local people Learning about (lifelong)learning, informal learning, community learning Learning about digital literacy Learning about Community Informatics	**Practical learning:** Situated in the practice/praxis of community development (CD/CI), collaborative inquiry, action learning/action research, experimentation, Co-generation **Mechanisms:** Participation, collaboration, inter-action, (critical) reflection-in and on-action, envisioning **Learning incentive:** Community and organisational affiliation + learning opportunism

Appendix JJ
Learning as understanding in conceptions of learning in GraniteNet.

Conceptions of learning	Key learning questions and learning frontiers	Examples of learning as understanding
Category 1: Frontier learning conception	What is there to learn? What is out there for me? How do I get back there/out of here? What can I do with this knowledge?	Learning as seeking meaning that enables "interpretation of the reality in which you live"
Category 2: (Community) Service Learning conception 2A: Altruistic emphasis 2B: Vocational emphasis 2C: Leadership emphasis	What's going on here? How can I contribute? How do I do this? How can I help this person? What is my skill level? How am I doing? Is this going to help me get to where I want to go? What can we do? How can we do this?	A growing understanding of organisational and social practices and relationships and one's position in relation and potential contribution to these[192] (self-understanding) Being able to interpret different discourses and relate them to one another, to one's own learning, and the reality of the world of work and career life Learning where the answer is not known[193]; understanding that change is required and possible; the quest for understanding about how to affect change through "generating and testing possibilities"[194]
Category 3: Community Information Literacy/ Social Inclusion conception	What is out there for me? Where do I go? What is happening? How can I get involved? How can I help? How do I work this? What information do people need and how do they need it to be presented?	A growing understanding of the workings of the local community and of one's position in relation and potential contribution to these Being able to interpret different discourses and relate them to one another and to one's own and others' information requirements
Category 4: Blended Community Learning conception	How can we get more people involved? Are you doing anything useful with that information? Which are the most important skills to learn?	Learning where the answer is not known; understanding that change is required and possible; the quest for understanding about how to affect change

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[192]   Hager and Halliday (2004) refer to this as "a growing capacity to make context-sensitive judgments", which is their definition of informal learning.
[193]   Carroll (2009).
[194]   Bruner (2012).

		Being able to interpret different discourses and relate them to one another and to one's own learning
Category 5: Digital Stewardship/Enterprise Learning conception	Who is going to be using this? What are their needs? What am I missing here? Is there something I don't know? Is there a better way?	Being able to interpret different discourses and relate them to one another and to one's own and others' information requirements Insights generated through reflection-in-action Resolution of a problem
Category 6: Community Technology Capacity-building conception	How do I apply what I already know, or do I need to know something else to help this person? How can technology be used for developing community projects?	Being able to interpret different discourses and relate them to one another and to one's own learning Insight generated by reflection-in-action Resolution of a problem
Category 7: Learning Community conception	What are we doing and why are we doing it? What is GraniteNet about? How do people see GraniteNet? What do people want to learn? How can we encourage people to participate in learning? What are the opportunities?	Generating insights through collaborative inquiry and critical reflection Learning where the answer is not known; understanding that change is required and possible; the quest for understanding about how to affect change through "generating and testing possibilities"[195]

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[195] Bruner (2012)